



## **Overview of the 2011 BSAI Groundfish SAFE Report**

BSAI Groundfish Plan Team

- Mike Sigler, co-chair
- Grant Thompson, co-chair
- Jane DiCosimo, coordinator



**NOAA  
FISHERIES  
SERVICE**



# BSAI Plan Team Members (14 Members from 7 Institutions)

NPFMC

NMFS (Science Center)

NMFS (Regional Office)

USFWS

ADFG

Univ. Alaska

WDFW

Halibut Commission

Jane DiCosimo (Plan Coordinator)

Grant Thompson, Lowell Fritz, Dana Hanselman,  
Kerim Aydin, Alan Haynie, Mike Sigler

Mary Furuness

Leslie Slater

Dave Carlile, Dave Barnard

Brenda Norcross

Henry Cheng

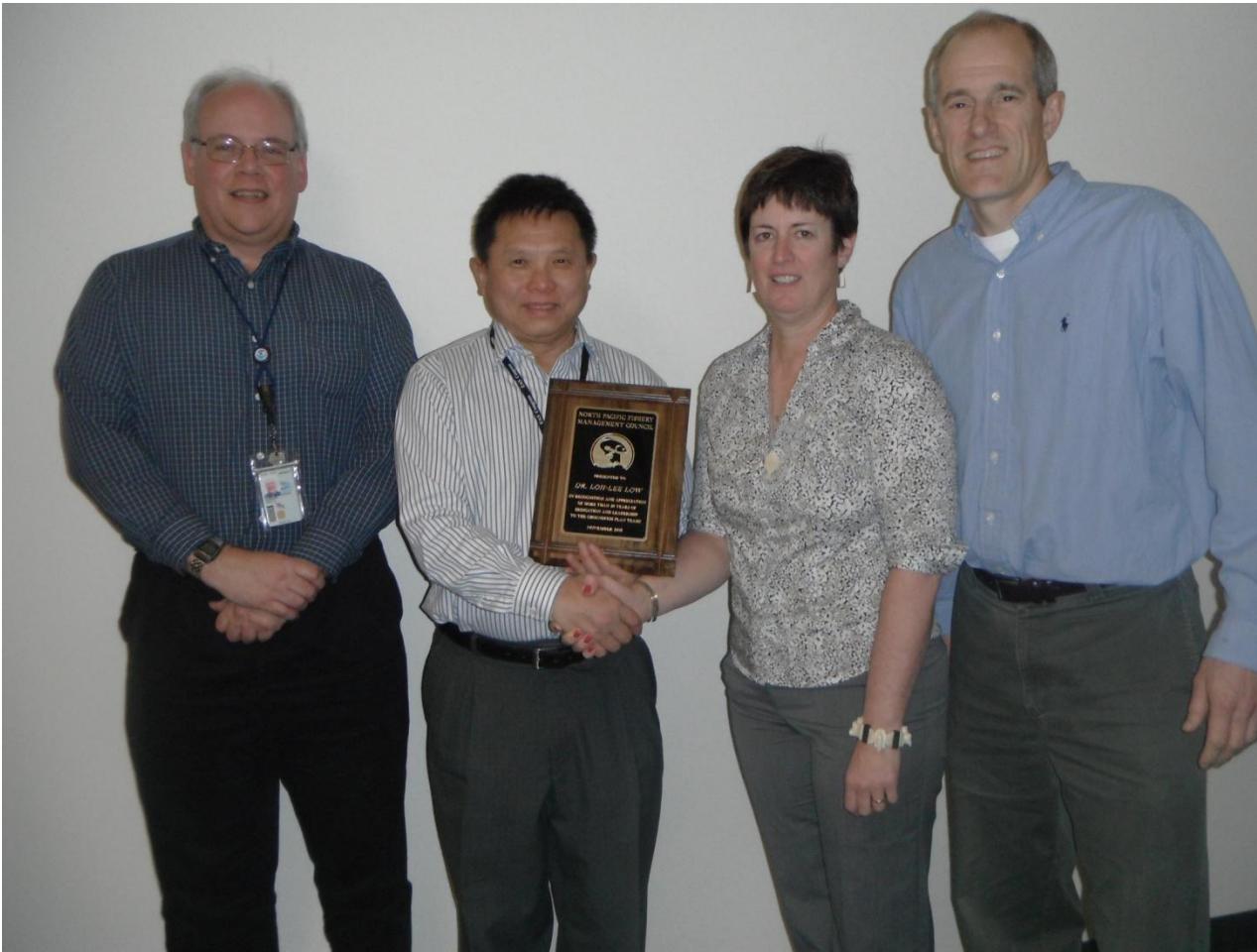
Bill Clark

Stock Assessment & Statistics Expertise – 7

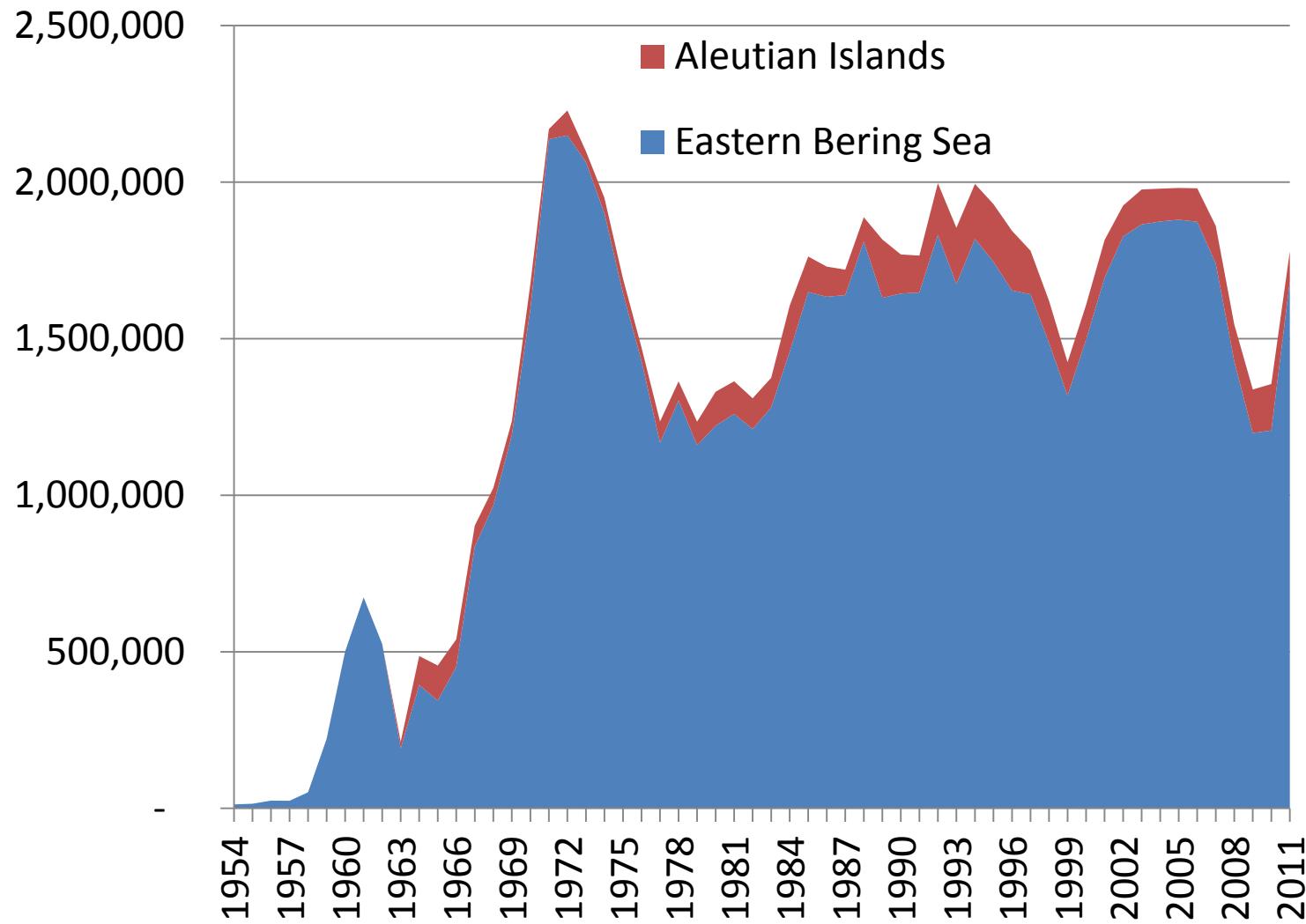
Marine Mammal, Seabird, Ecosystems, Economics Expertise – 1 each

Biology & Management Expertise - 3

**Jane DiCosimo congratulates Dr. Loh-lee Low  
for more than 30 years on the BSAI Groundfish  
Plan Team, with new BSAI Plan Team co-chairs  
Dr. Grant Thompson and Dr. Mike Sigler.**

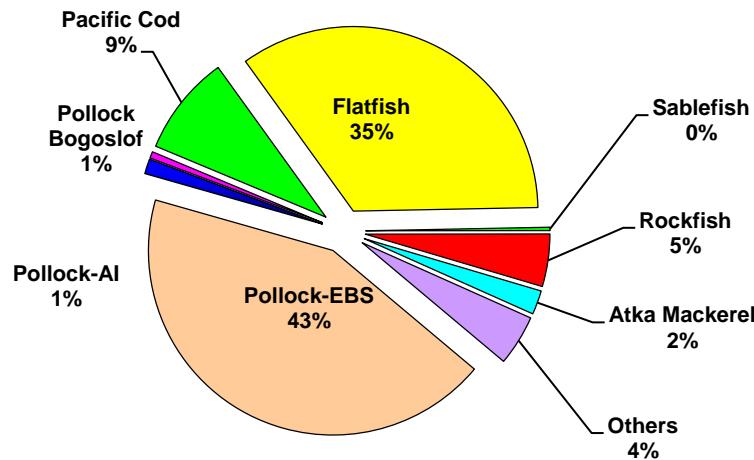


# Catch (mt)

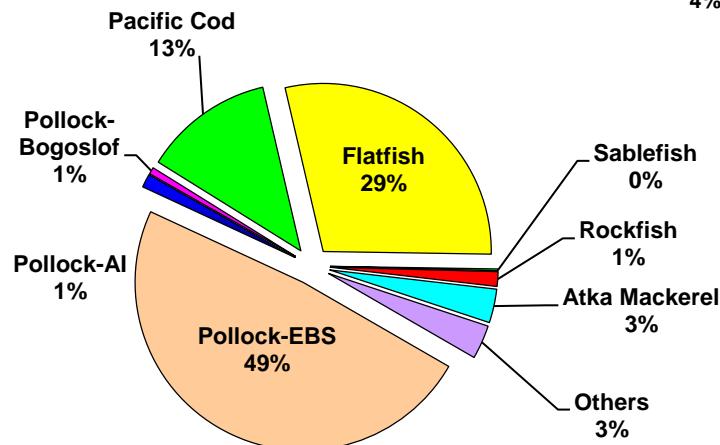


# Exploitable Biomass and ABCs

## (Percent Change from 2011-2012)



**Biomass = 19.3 mmt**  
**Down 6%**



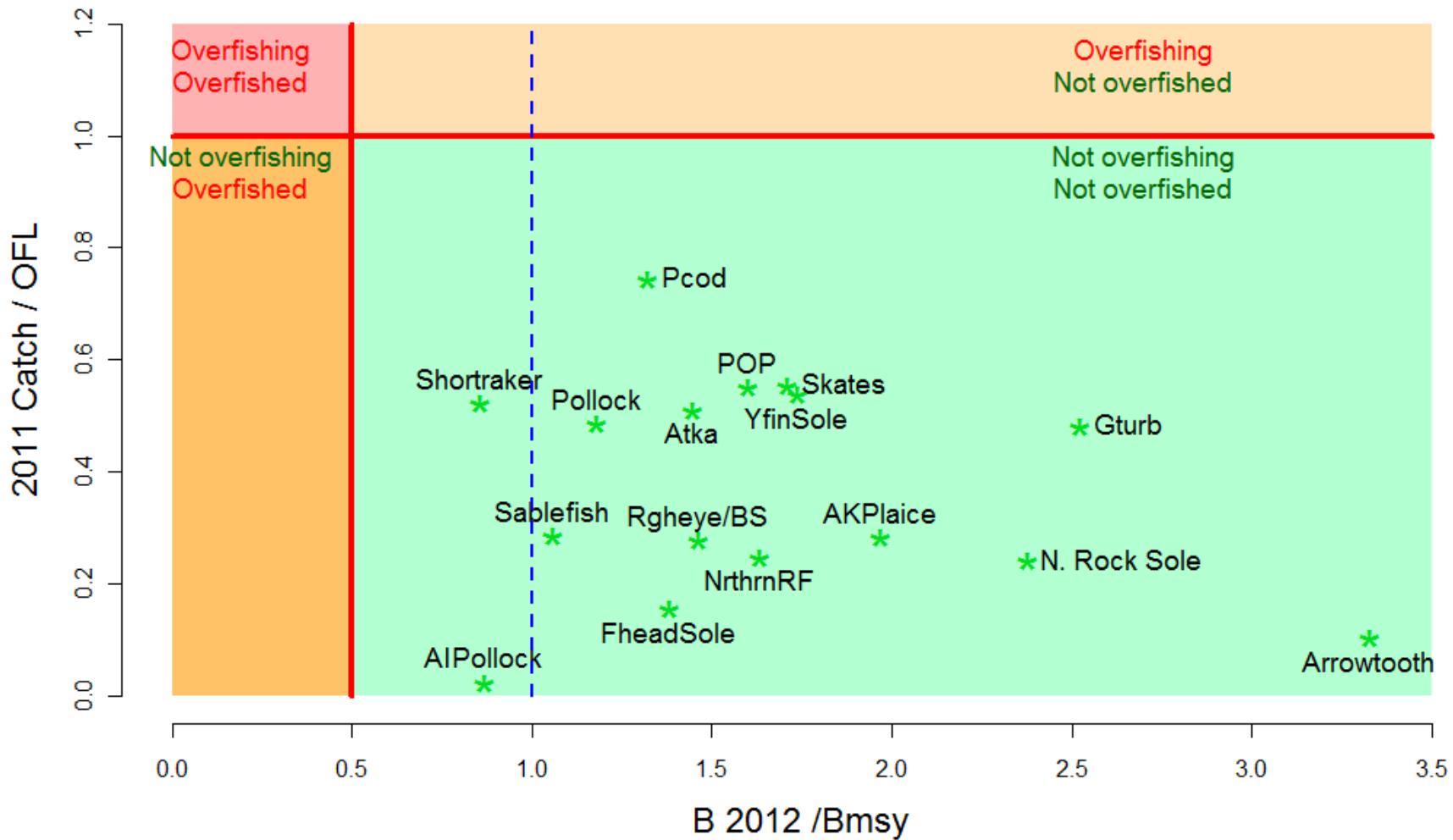
**ABC = 2.51 mmt**  
**Down 1%**

# BSAI Percent Changes by Major Groups

## Changes from 2011-2012

Species Group	Biomass	ABC
Pollock	-13%	-3%
Cod	8%	34%
Flatfish	-3%	-8%
Rockfish	-1%	0%
All others	0%	5%
Total	-6%	-1%

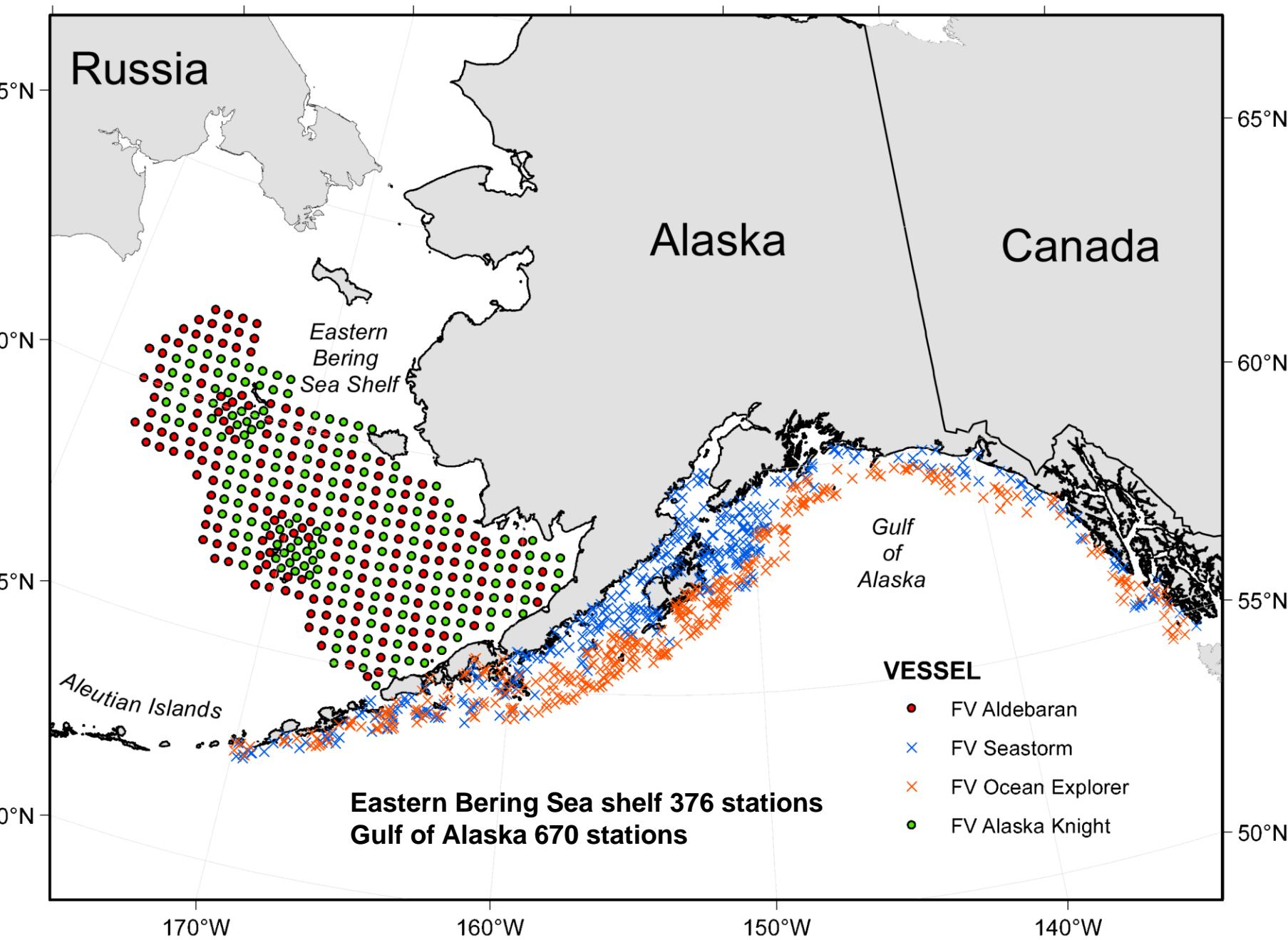
# Report Card



Summary status of age-structured BSAI species as measured by 2011 catch level relative to OFL (vertical axis) and projected 2012 spawning biomass relative to  $B_{MSY}$ .

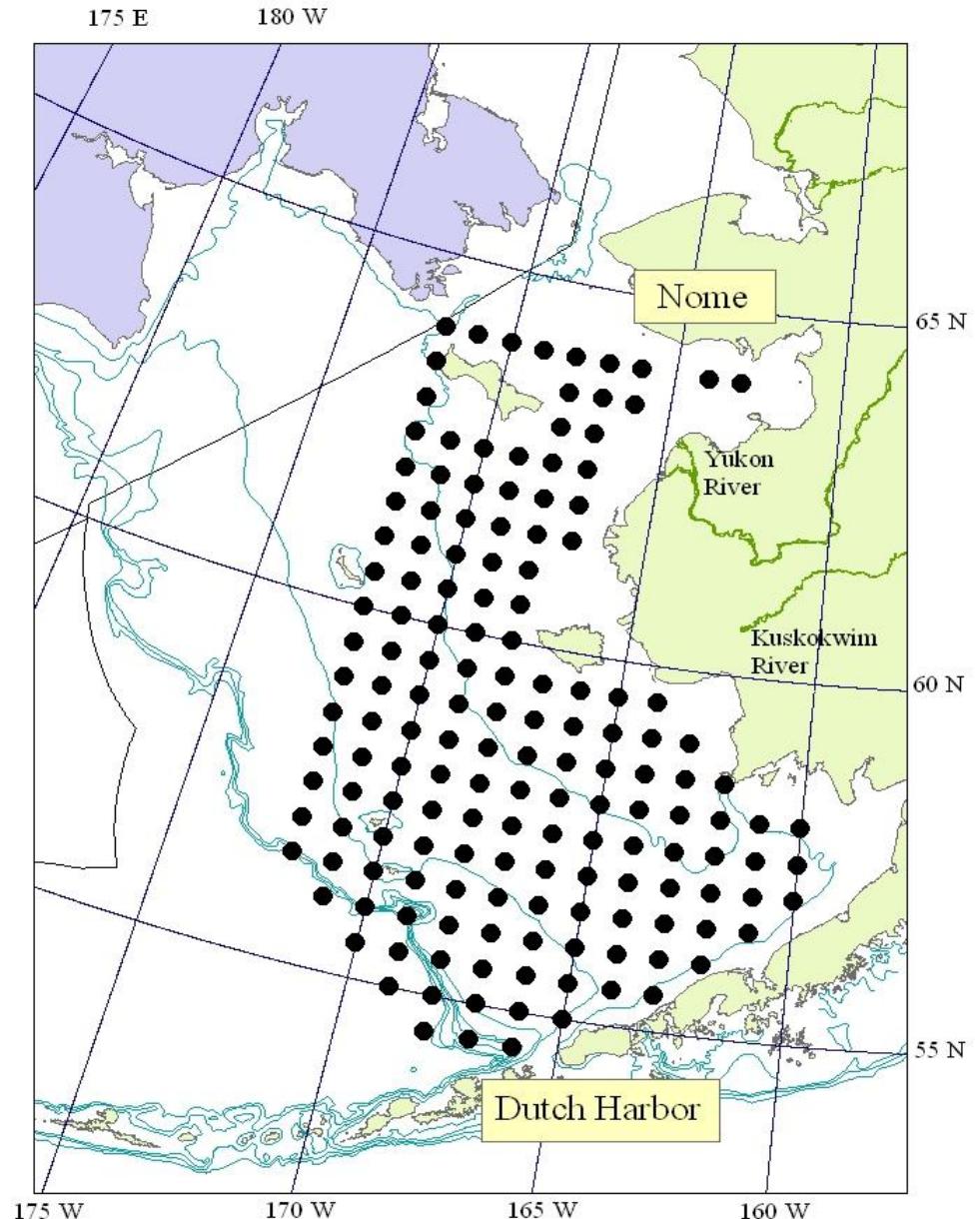
# 2011 Surveys

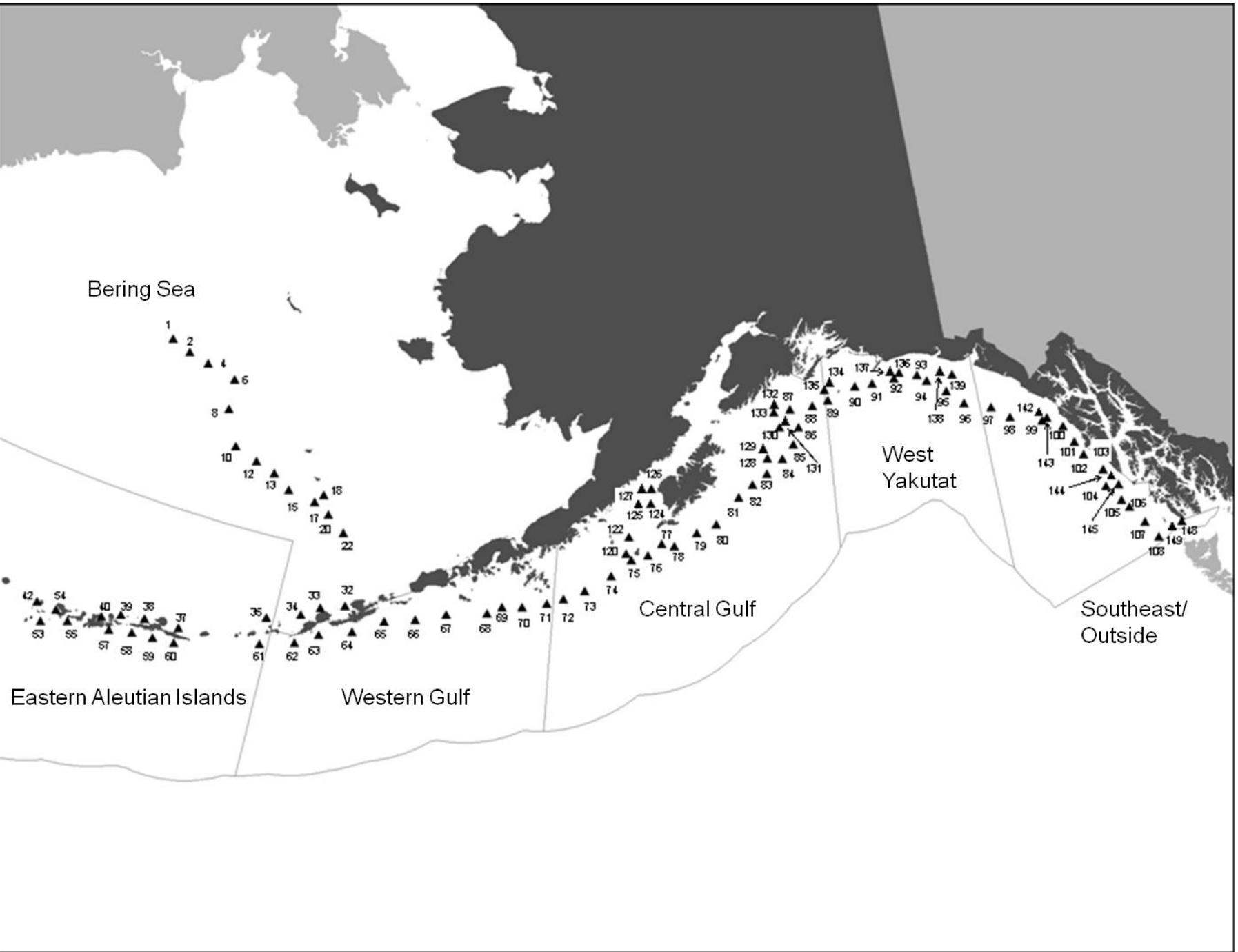
- EBS shelf bottom trawl survey
  - No Bering Sea slope or Aleutian Islands bottom trawl survey
  - Acoustic vessels of opportunity
- EBS surface trawl/acoustic survey (BASIS)
- Sablefish Longline Survey (Bering Sea)

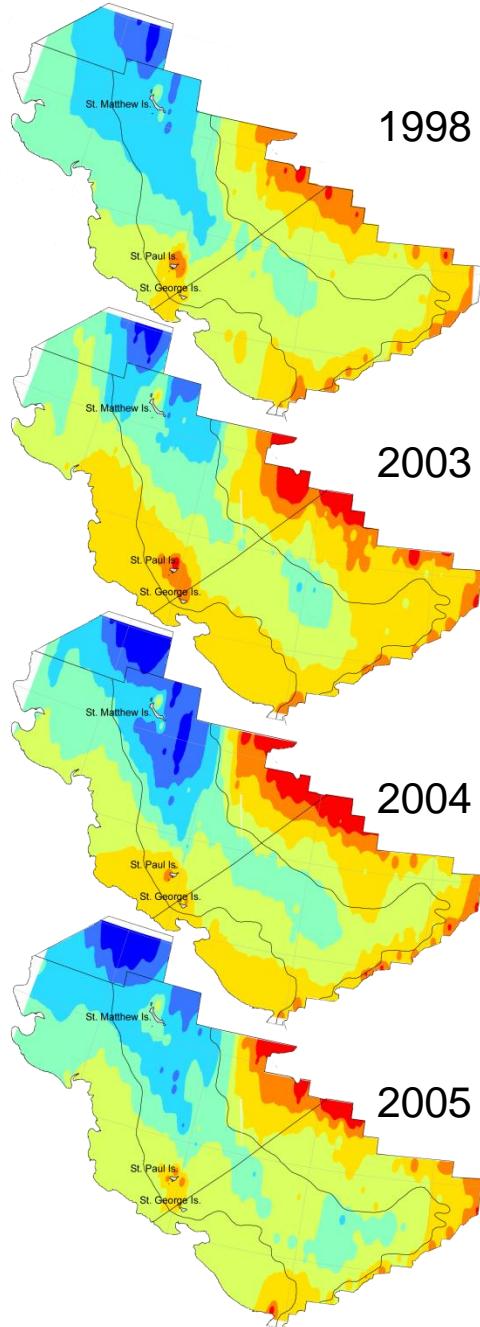


# **Surface trawl / acoustic survey (BASIS)**

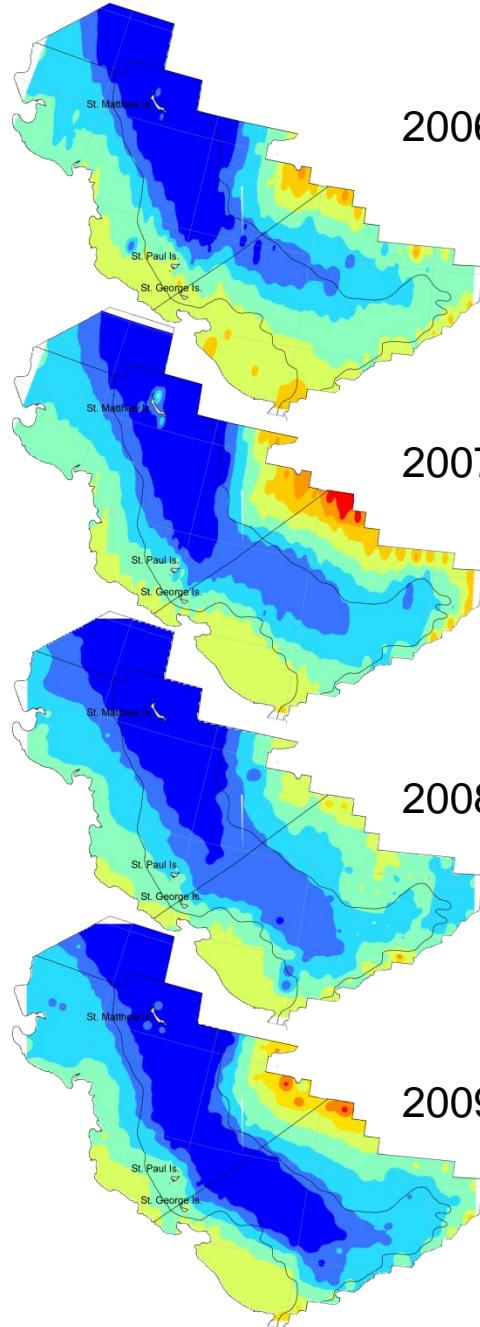
## **Juvenile fish and oceanography**





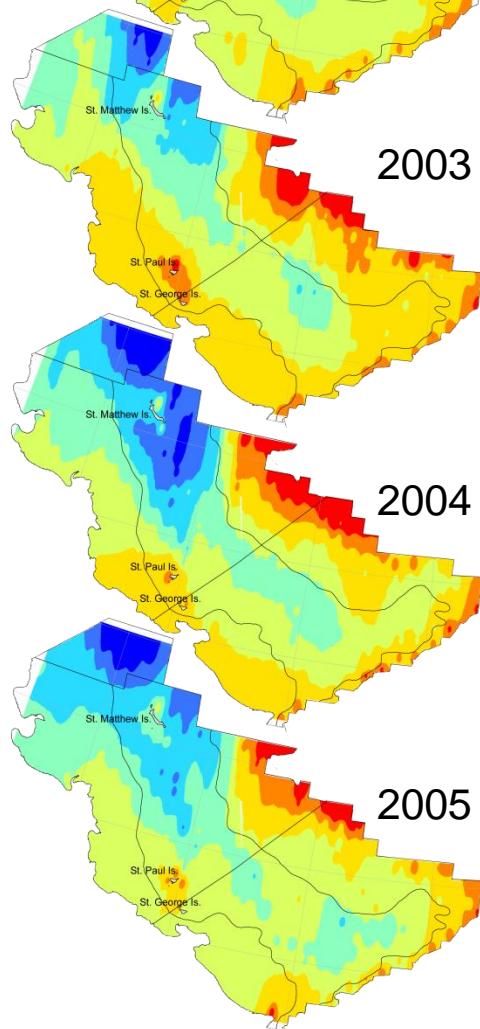


1998

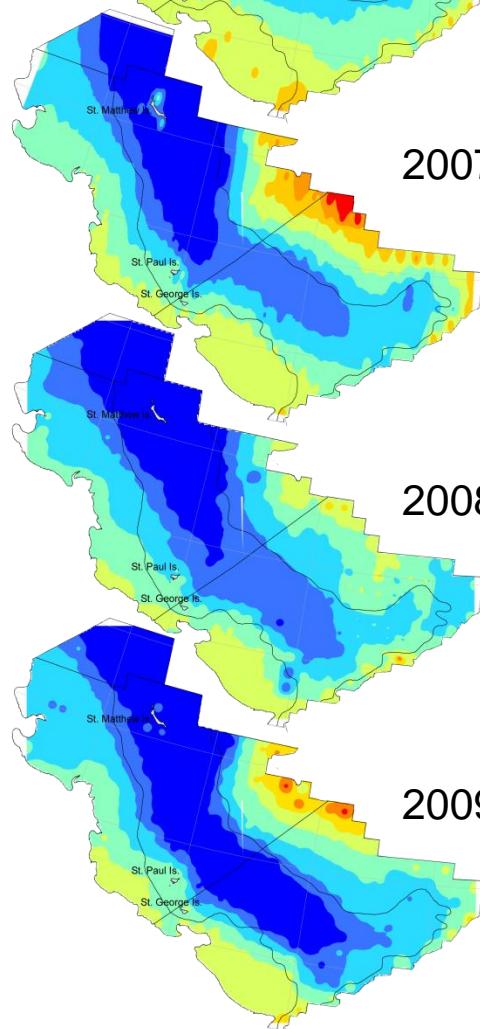


2006

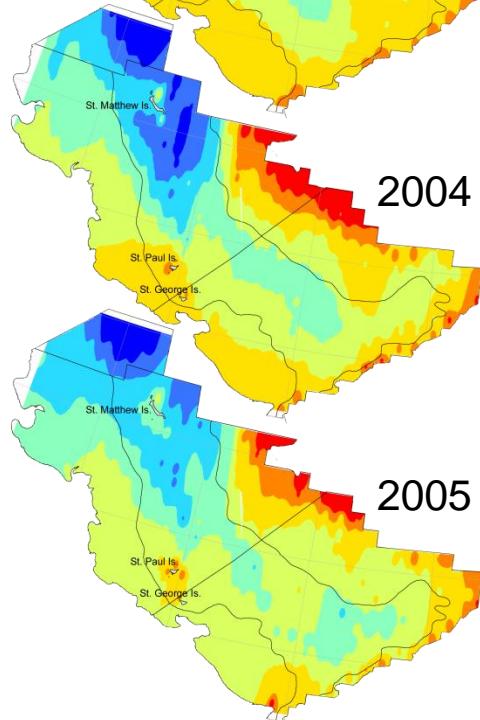
**Eastern Bering Sea**  
**Warm versus Cold**  
**Years**



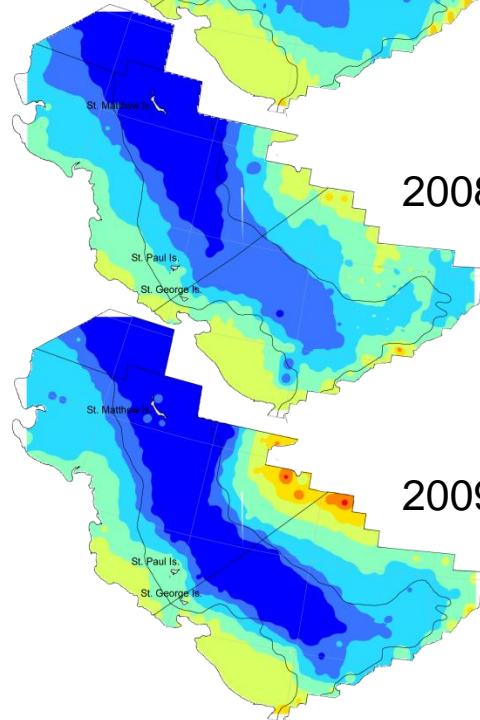
2003



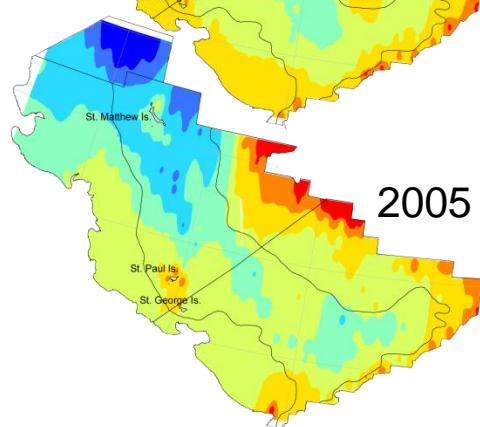
2007



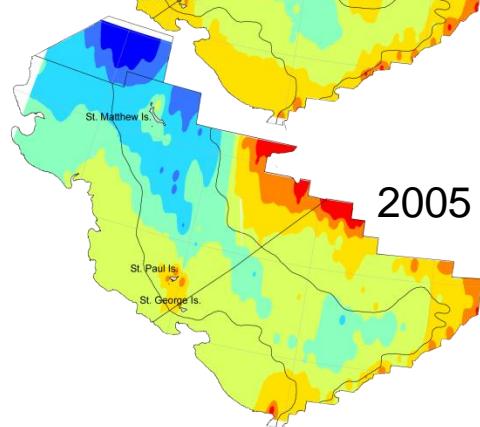
2004



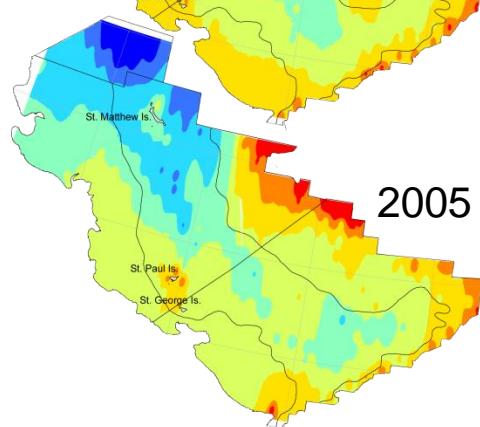
2008



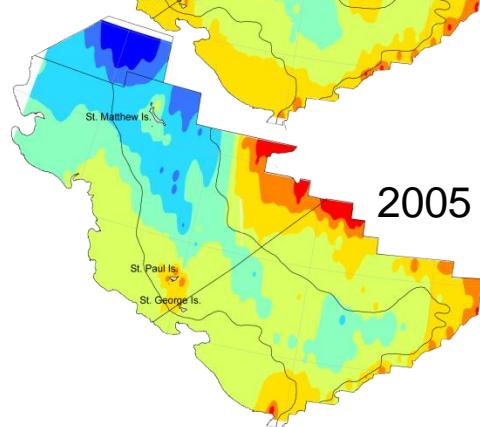
2005



2009



2010

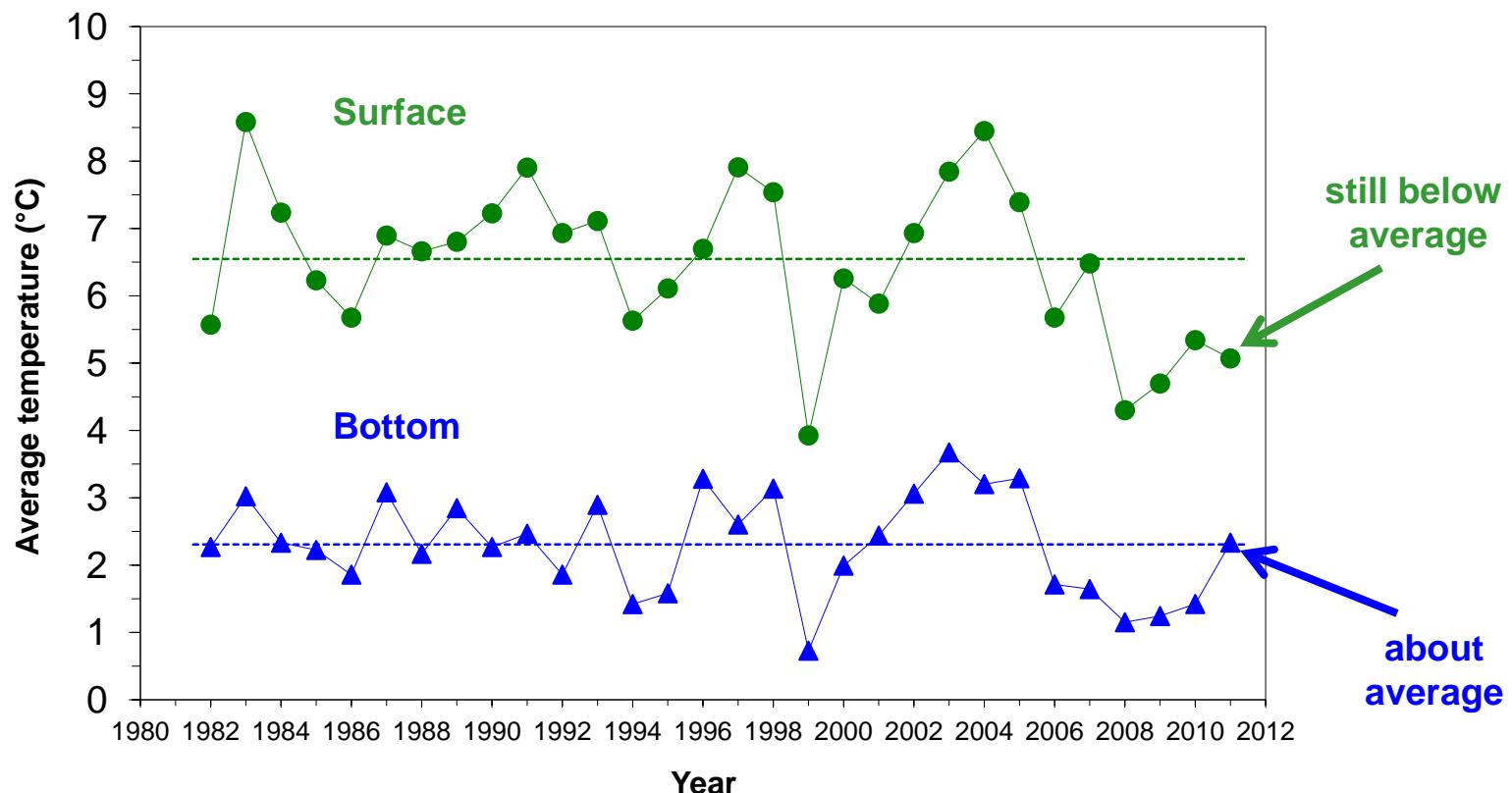


2011

# Alaska Fisheries Science Center

## Average Bottom Trawl Survey Temperatures

### 1982-2011



# **Harvest Control Rules**

**Based on Quality of Assessment Data**

**Tier 1 – Age-structured assessment, well-defined stock-recruitment relationship**

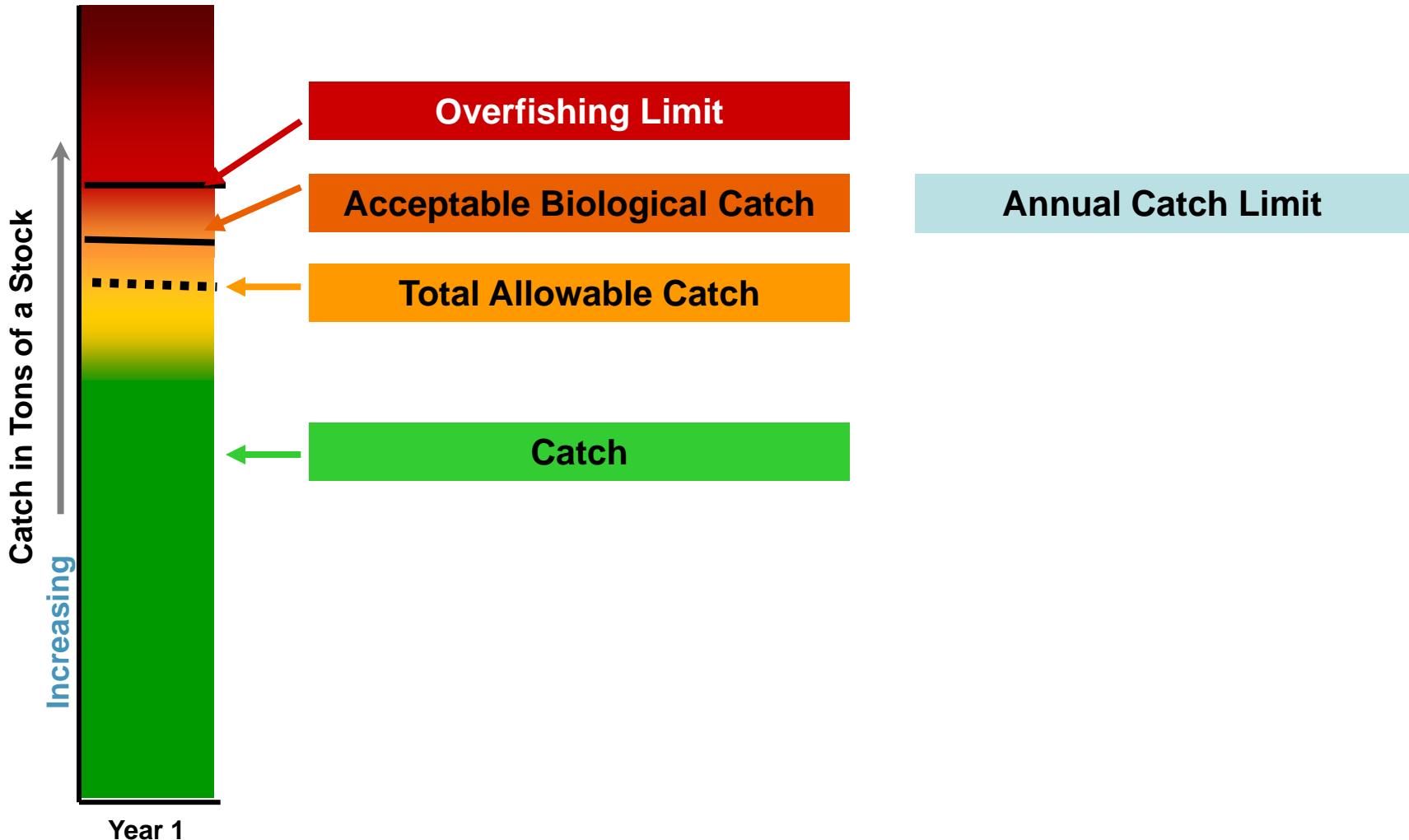
**Tier 3 – Age-structured assessment**

**Tier 5 -- Reliable survey biomass estimates and estimate of natural mortality**

**Tier 6 – Reliable catch history data**

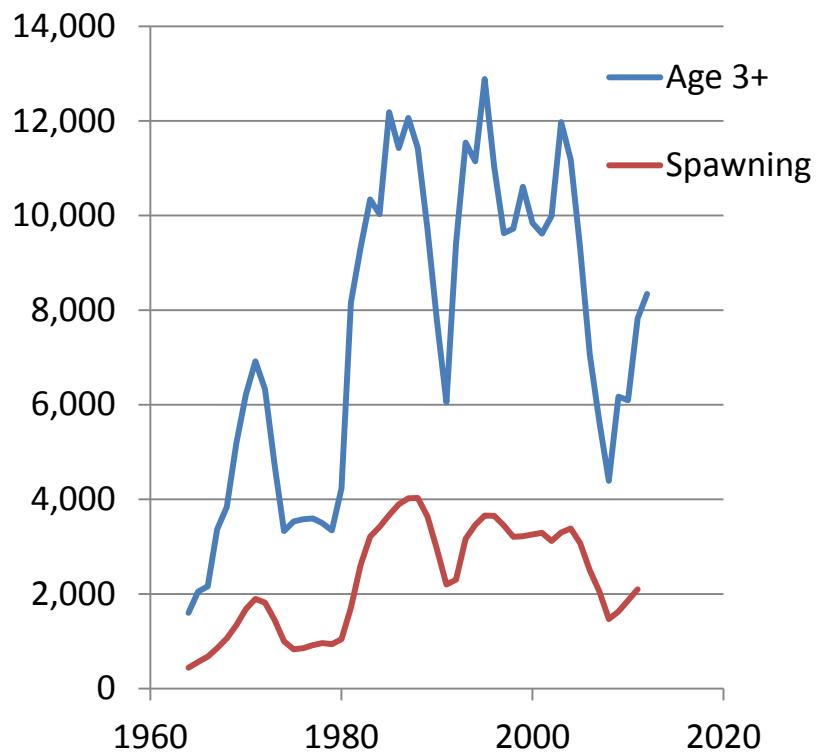
# Biological Benchmarks

## OFL $\geq$ ABC $\geq$ ACL $\geq$ TAC

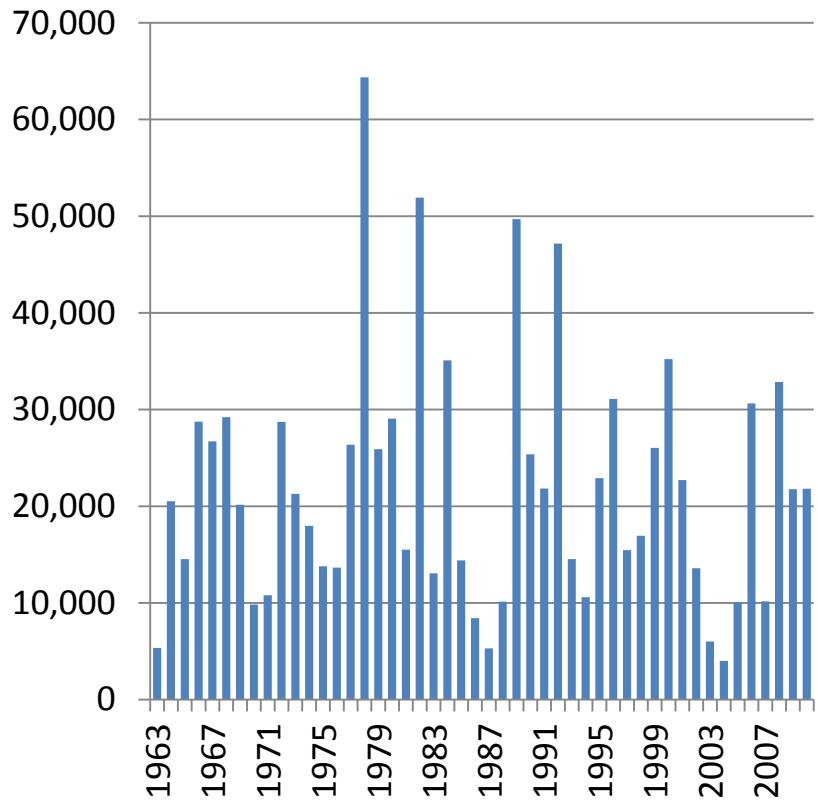


# Eastern Bering Sea Pollock

## Biomass (thousands mt)



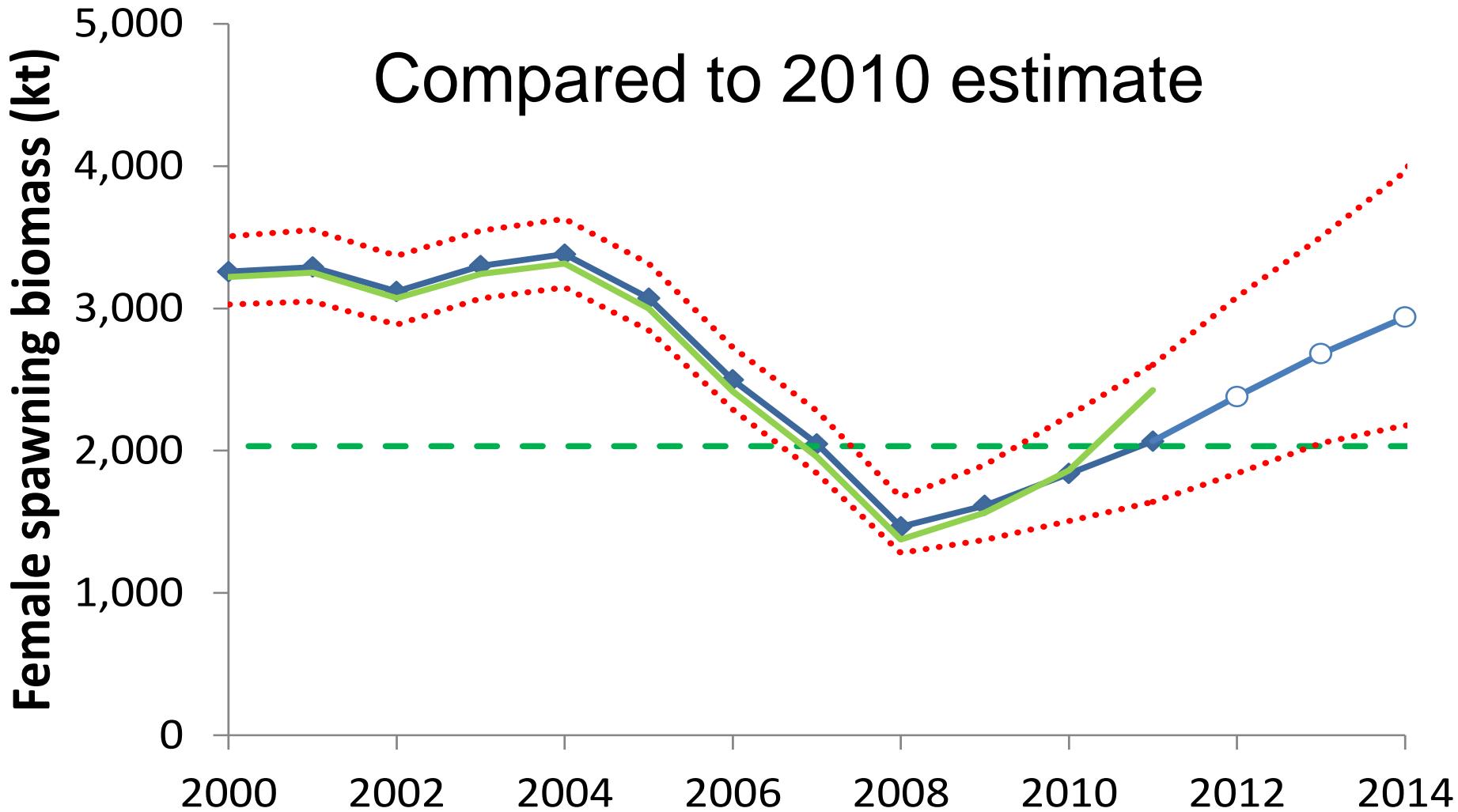
## Recruitment



# Spawning biomass projection

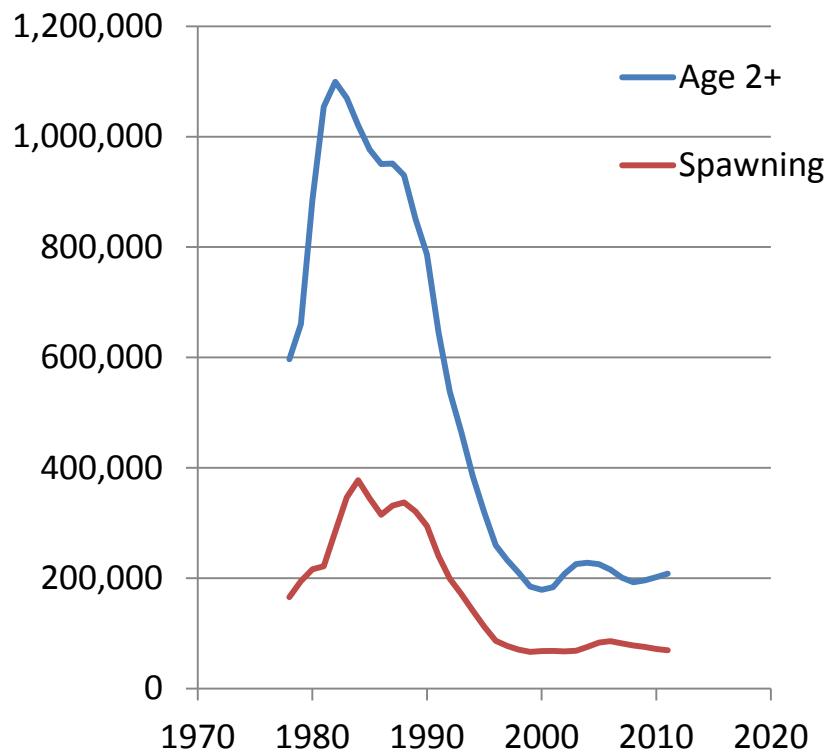


Compared to 2010 estimate

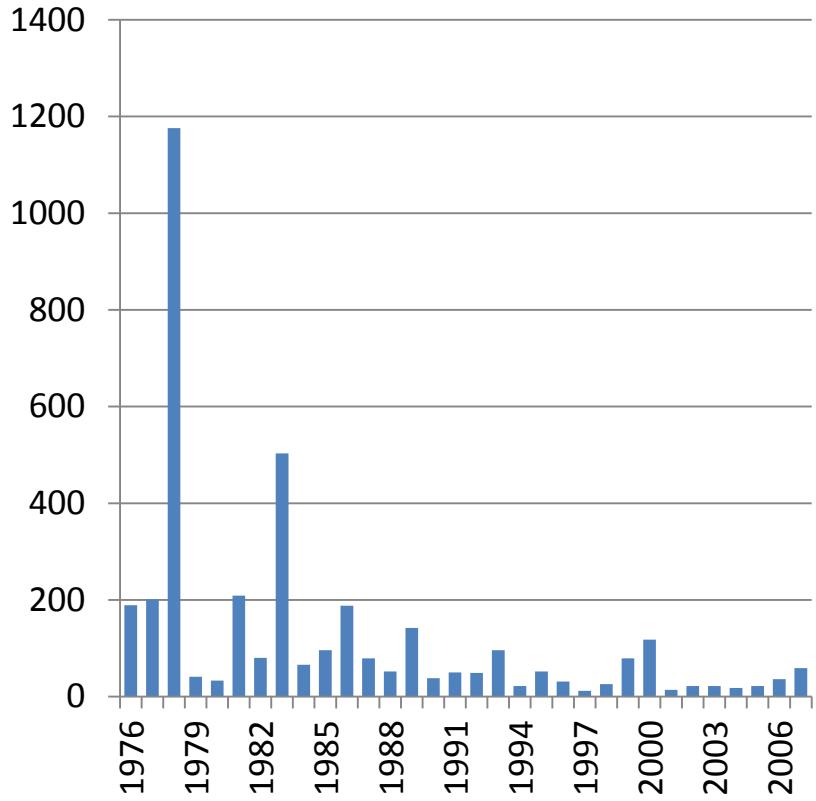


# Aleutian Islands Pollock

## Biomass (mt)

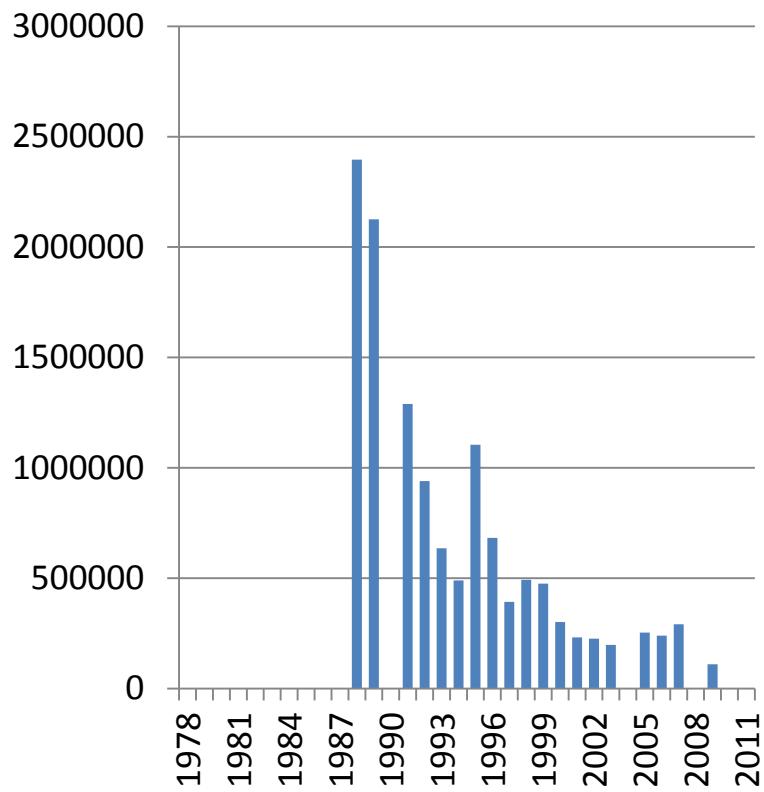


## Recruitment

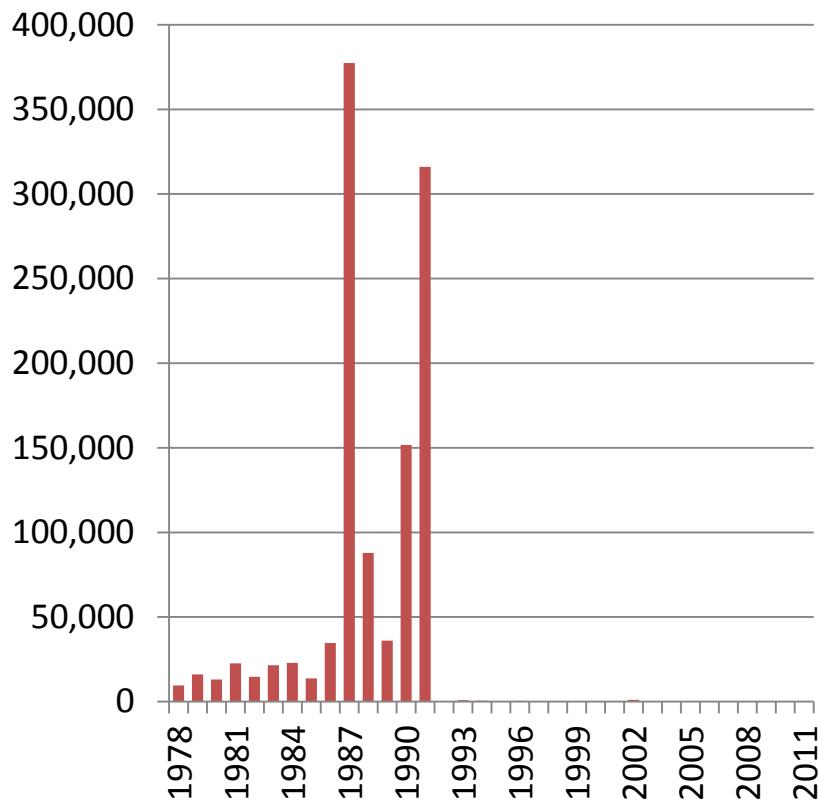


# Bogoslof Pollock

## Survey biomass (mt)



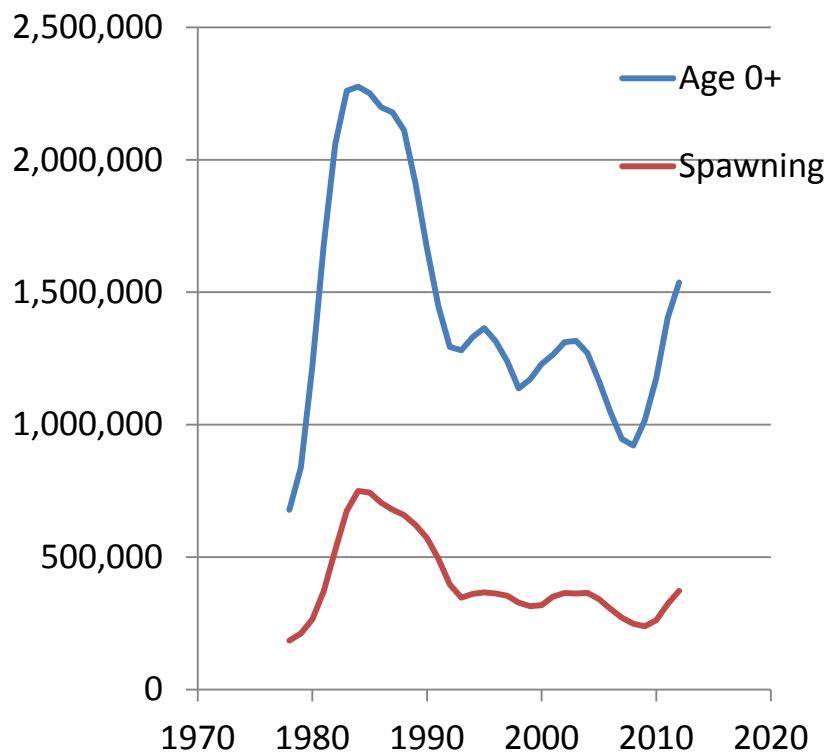
## Catch (mt)



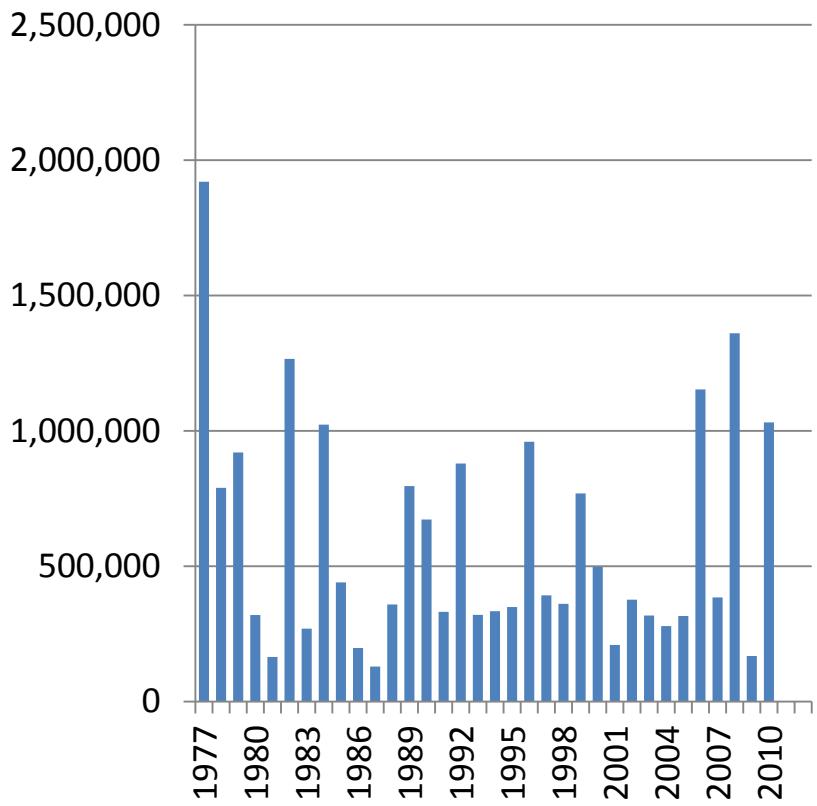
# Pacific cod



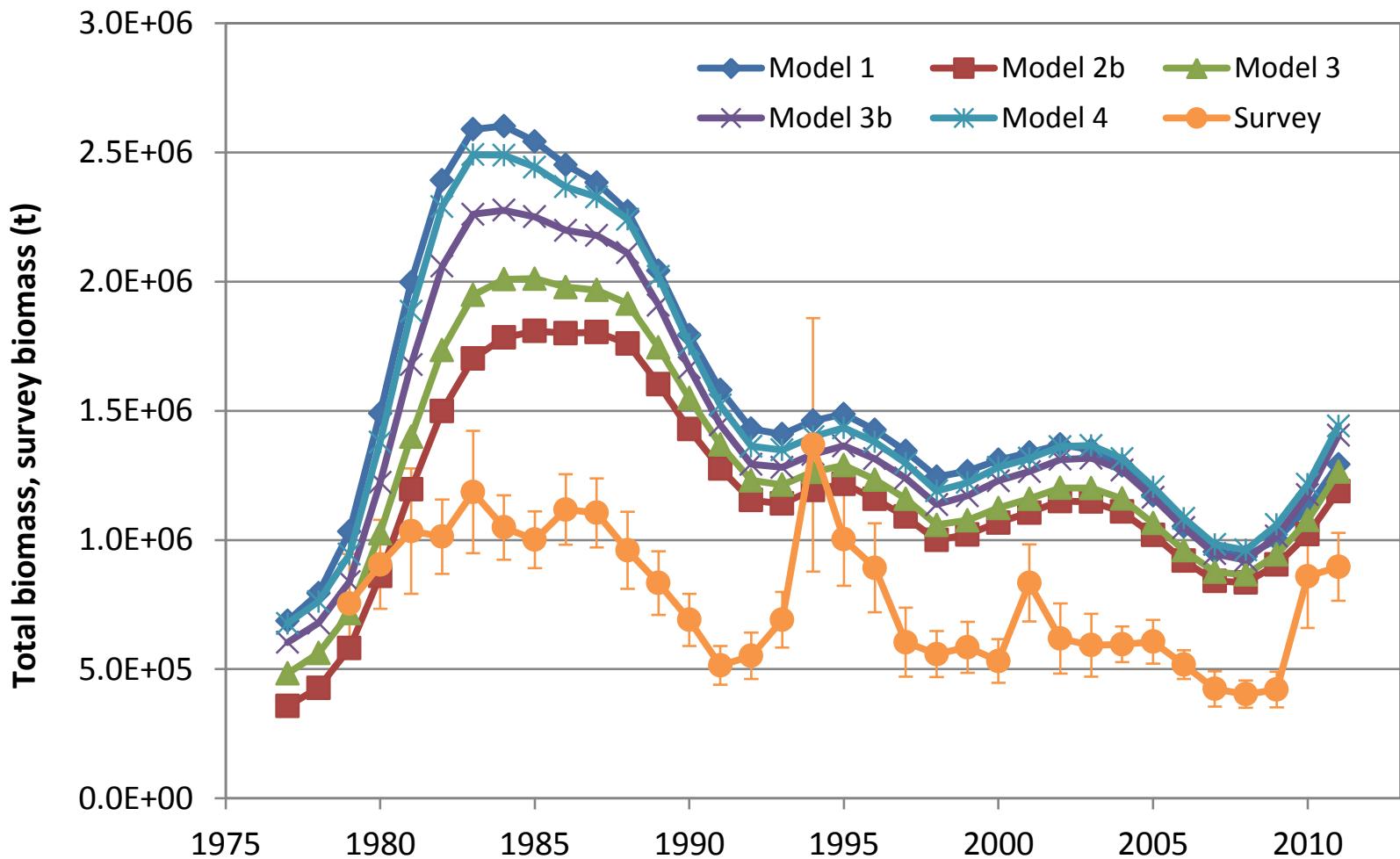
## Biomass (mt)



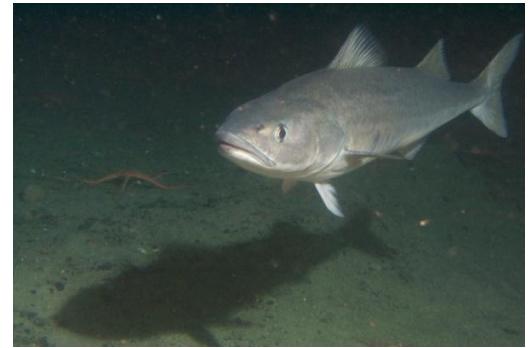
## Recruitment



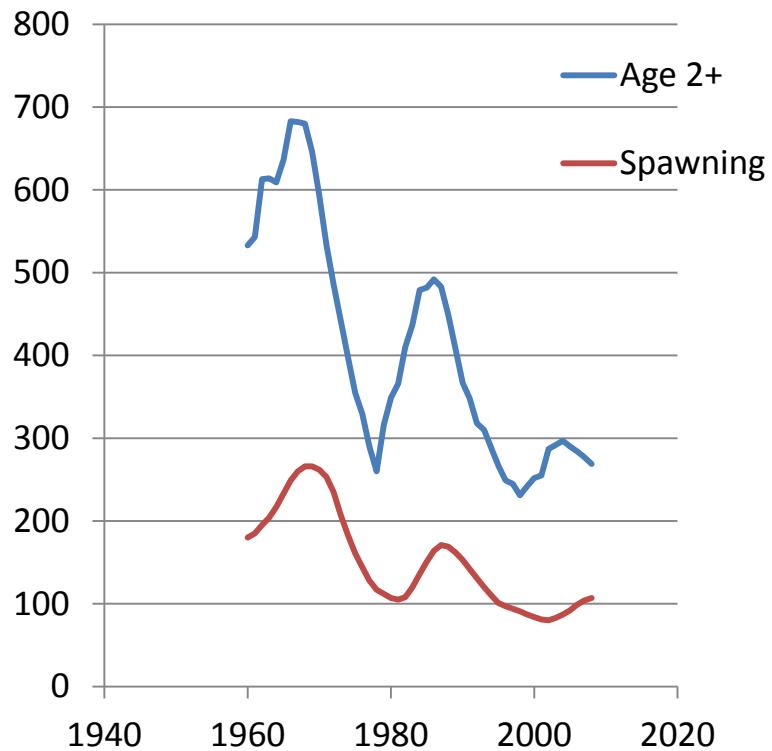
# Total (age 0+) biomass (EBS)



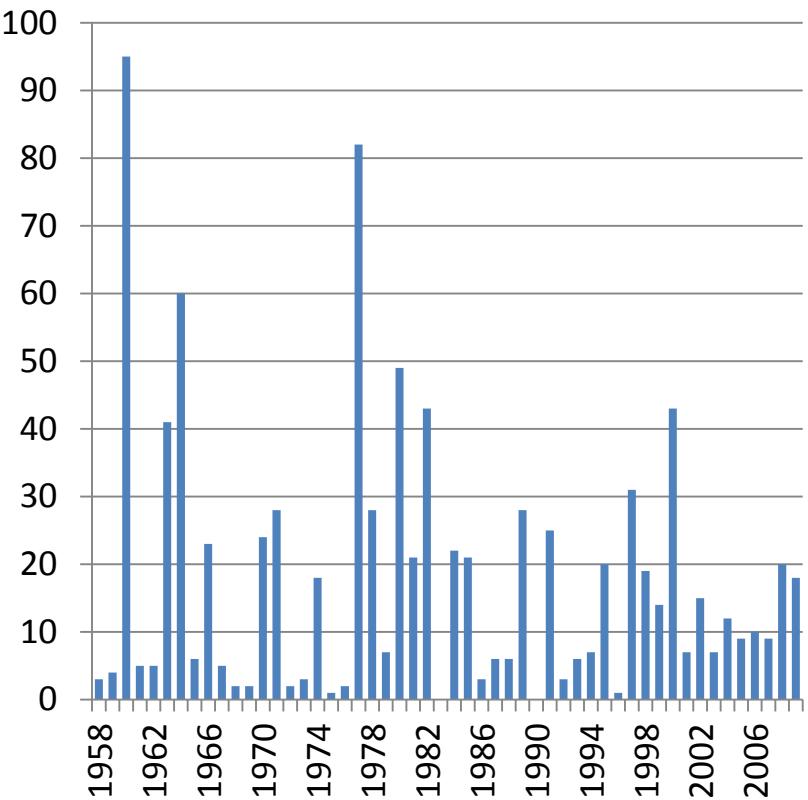
# Sablefish



## Biomass (thousands mt)

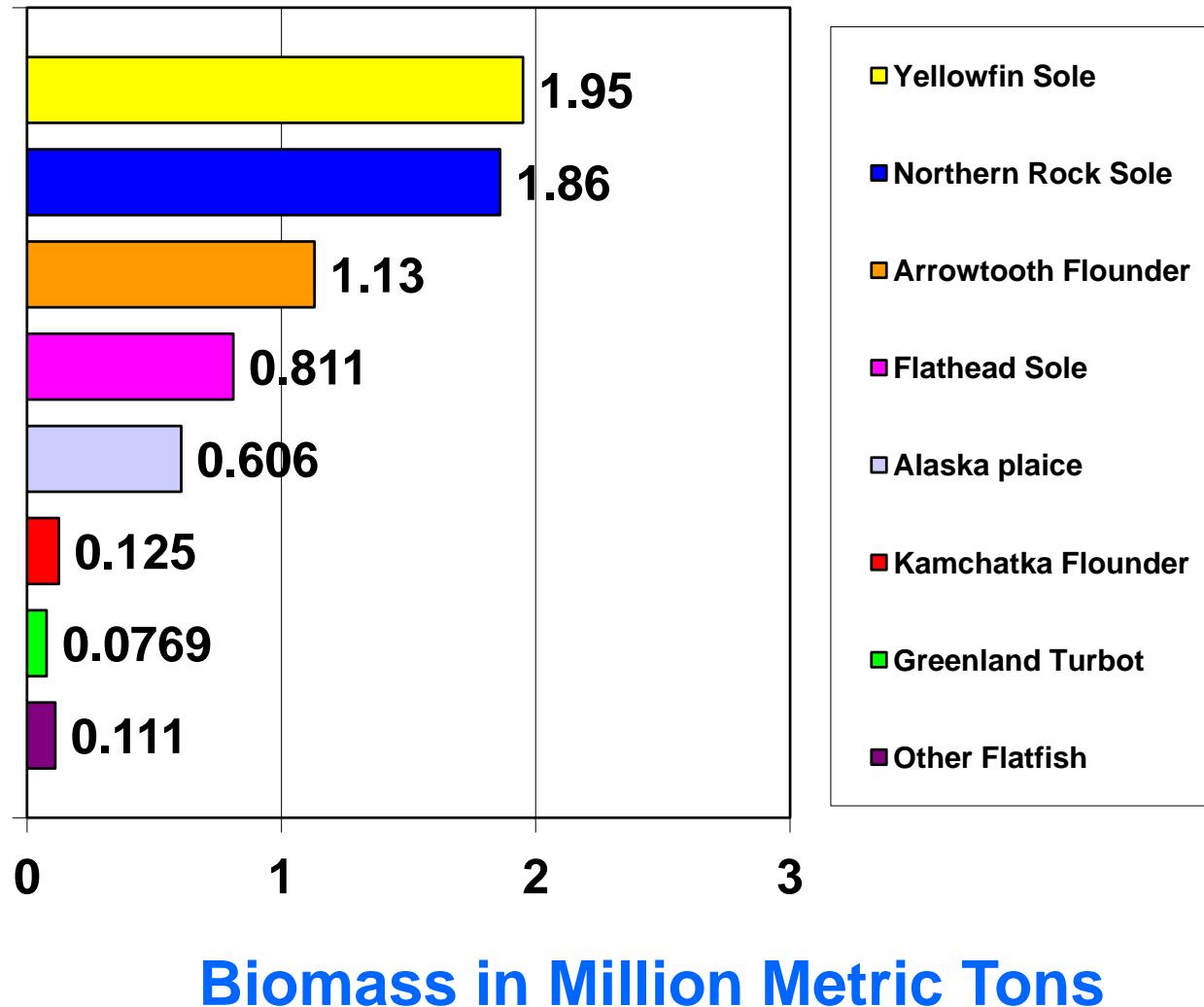


## Recruitment



# Flatfish Complex Exploitable Biomass, 2011

6.7 MMT or 35% of BSAI Groundfish Complex

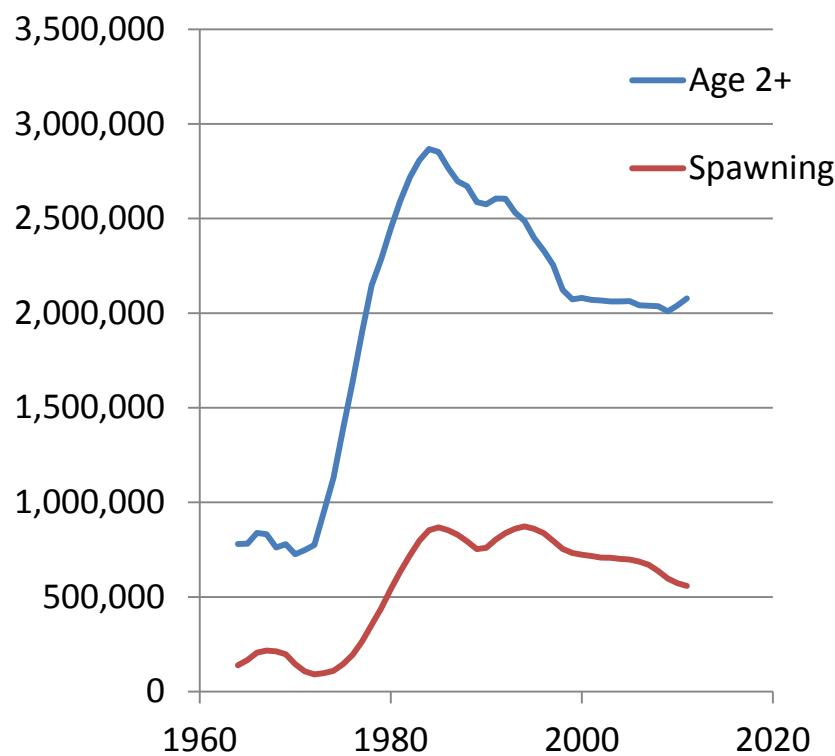




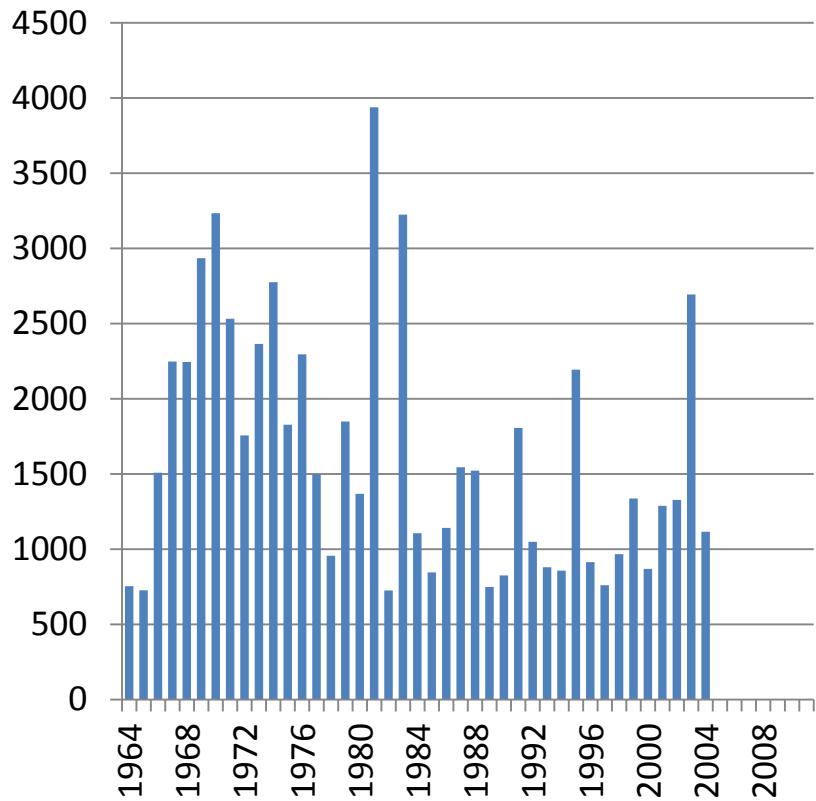
# Yellowfin sole



## Biomass (mt)

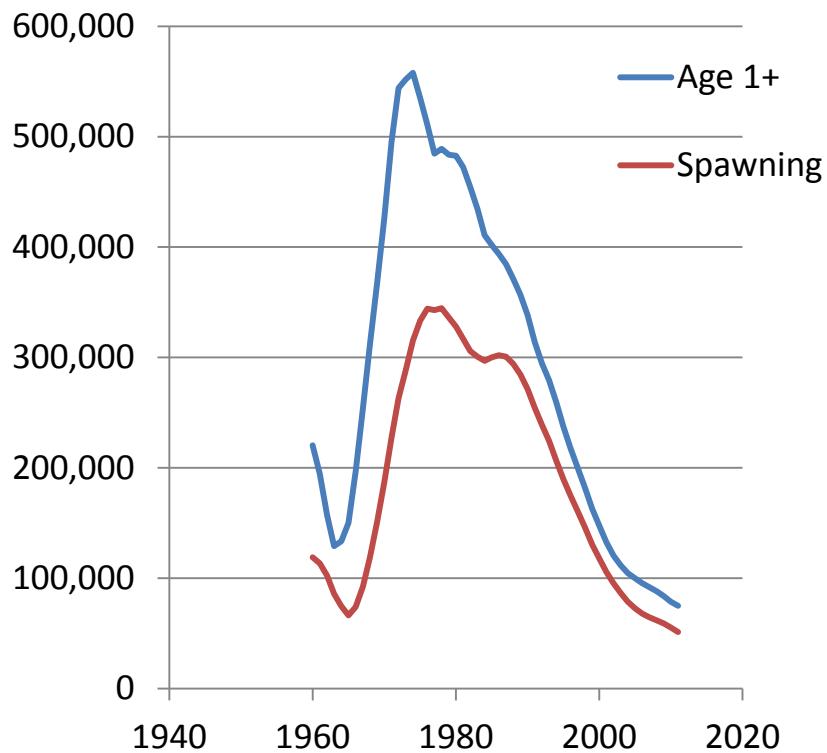


## Recruitment

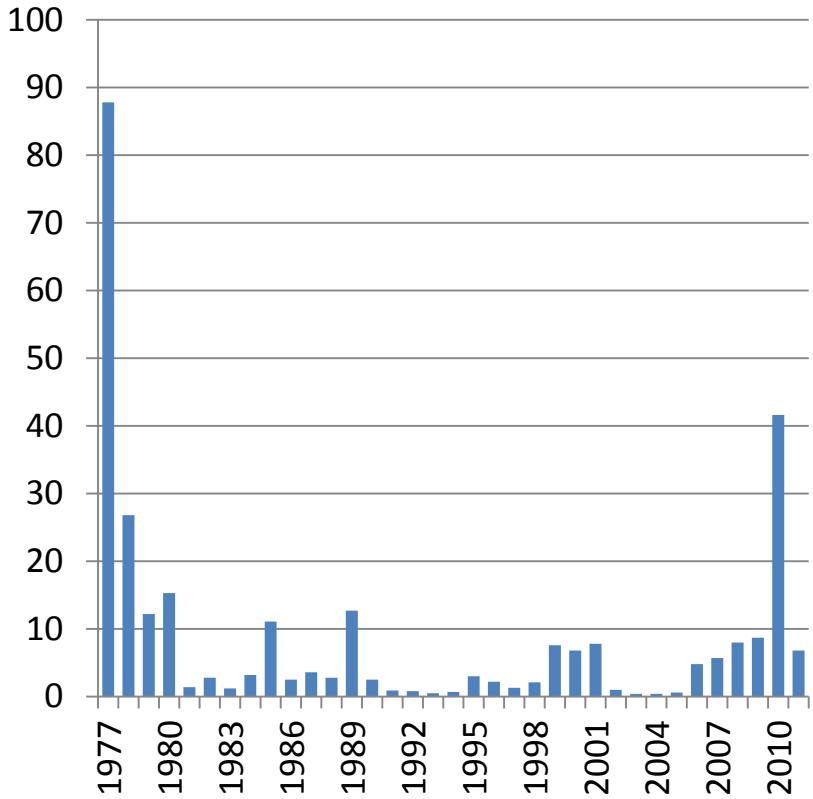


# Greenland turbot

## Biomass (mt)



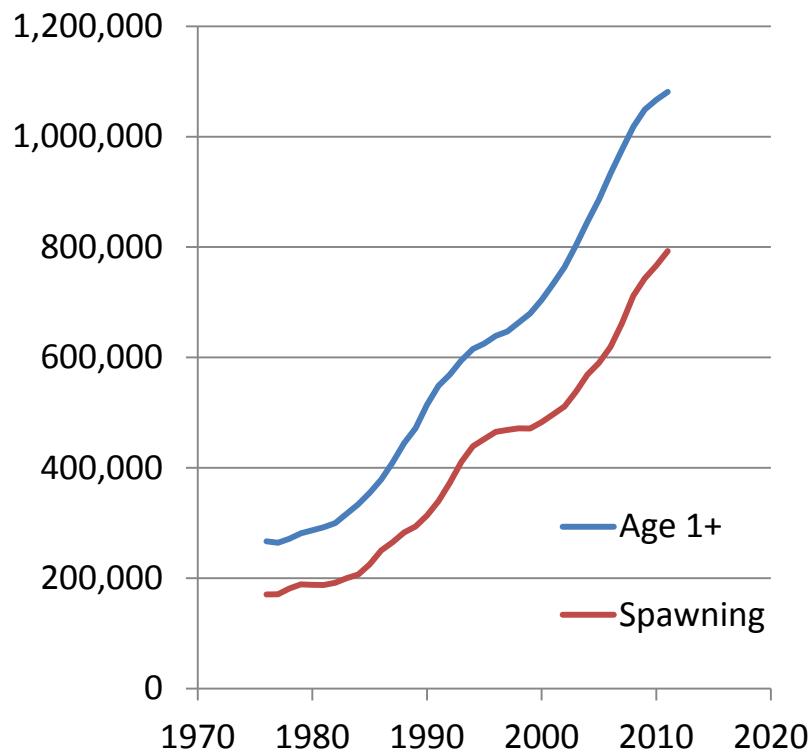
## Recruitment



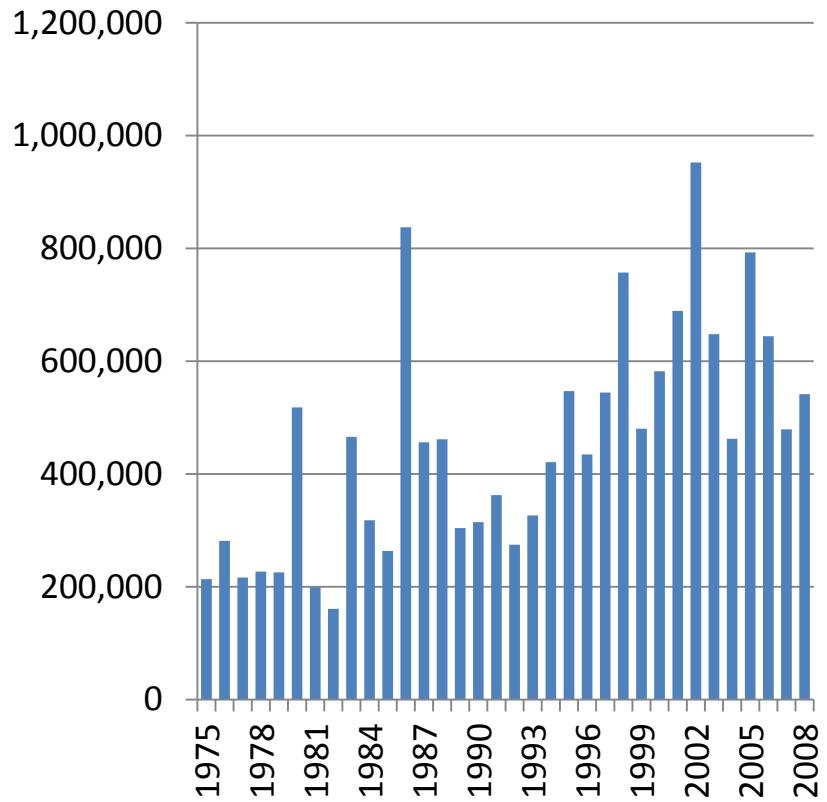
# Arrowtooth flounder



## Biomass (mt)

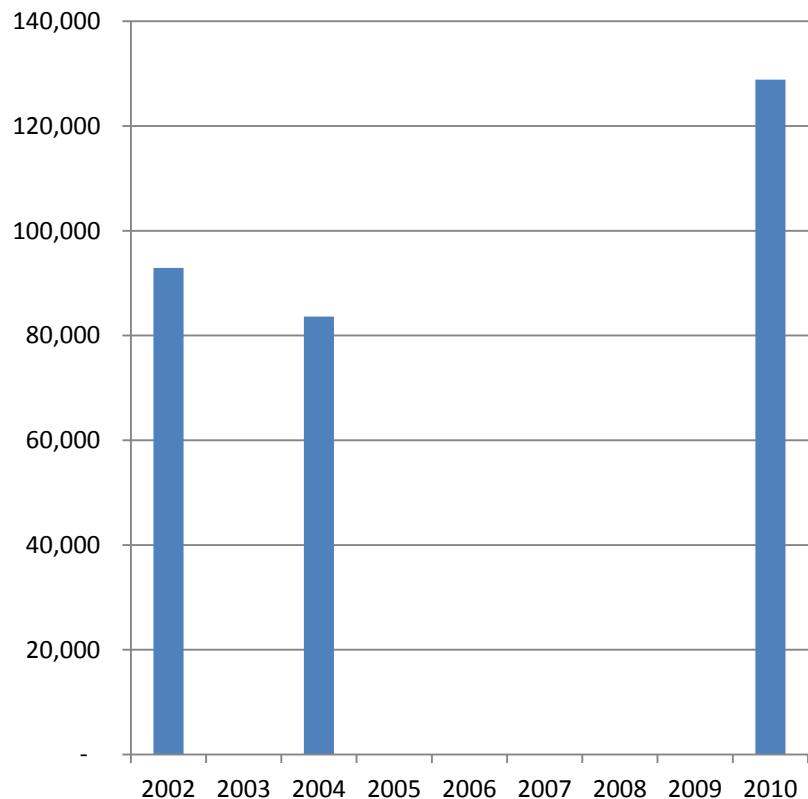


## Recruitment

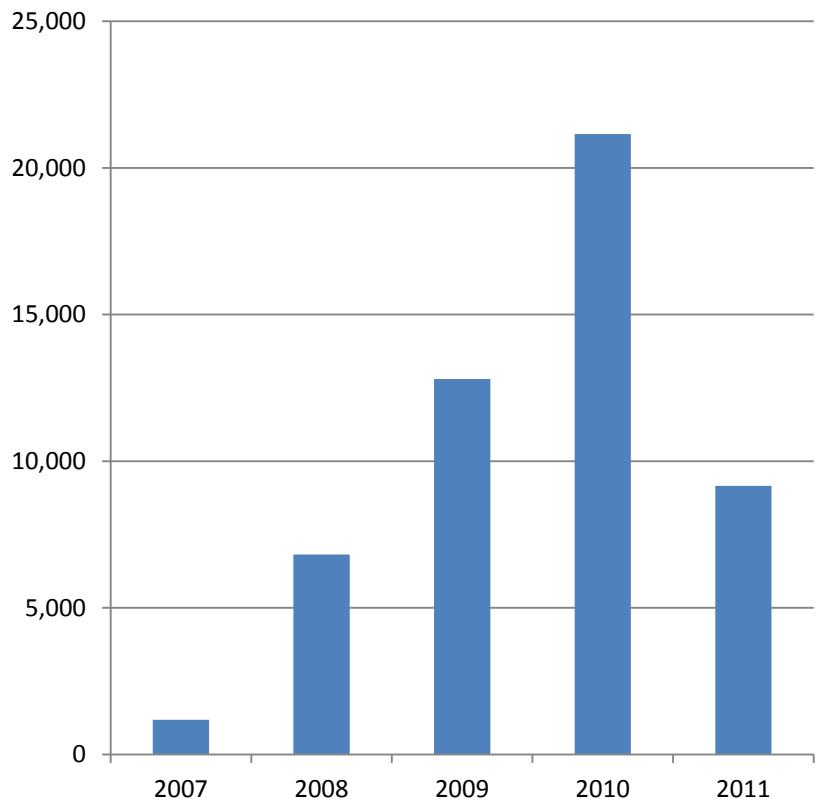


# Kamchatka flounder

**Survey biomass (mt)**



**Catch (mt)**

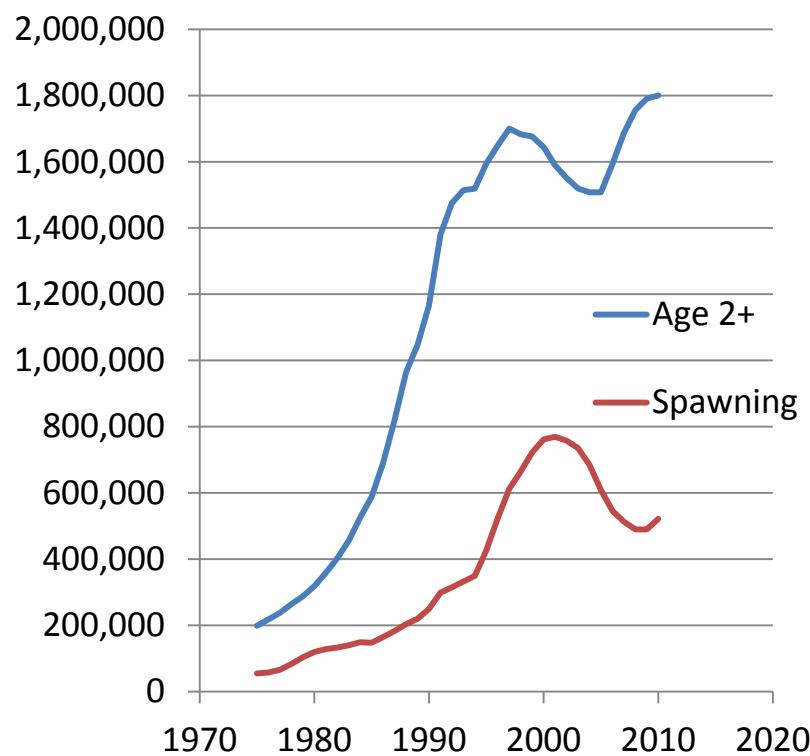




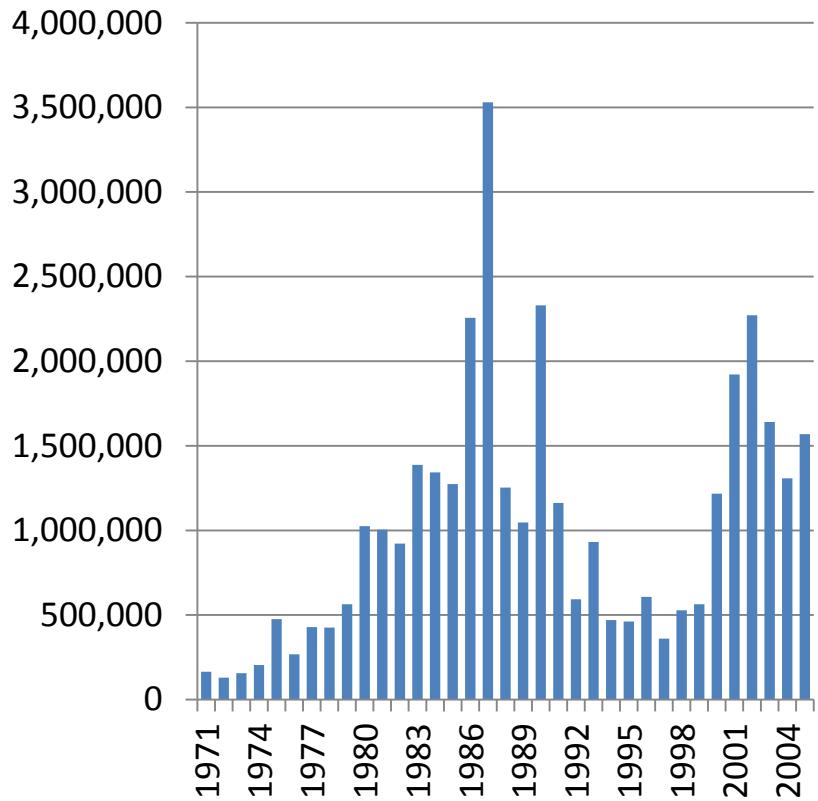
# Rock sole

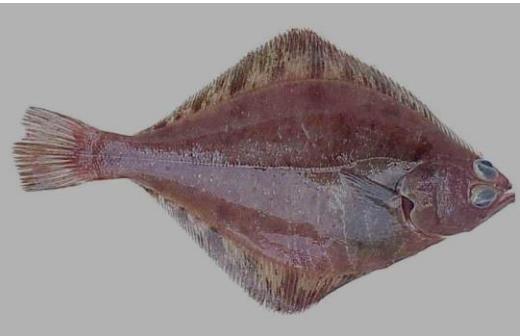


## Biomass (mt)

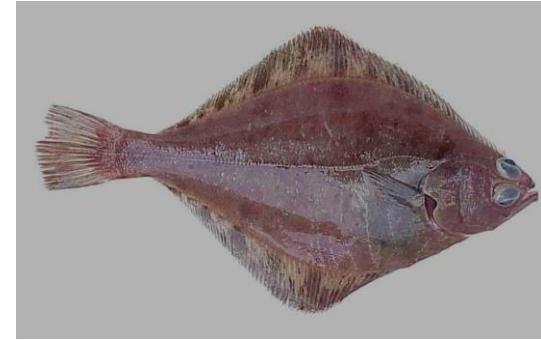


## Recruitment

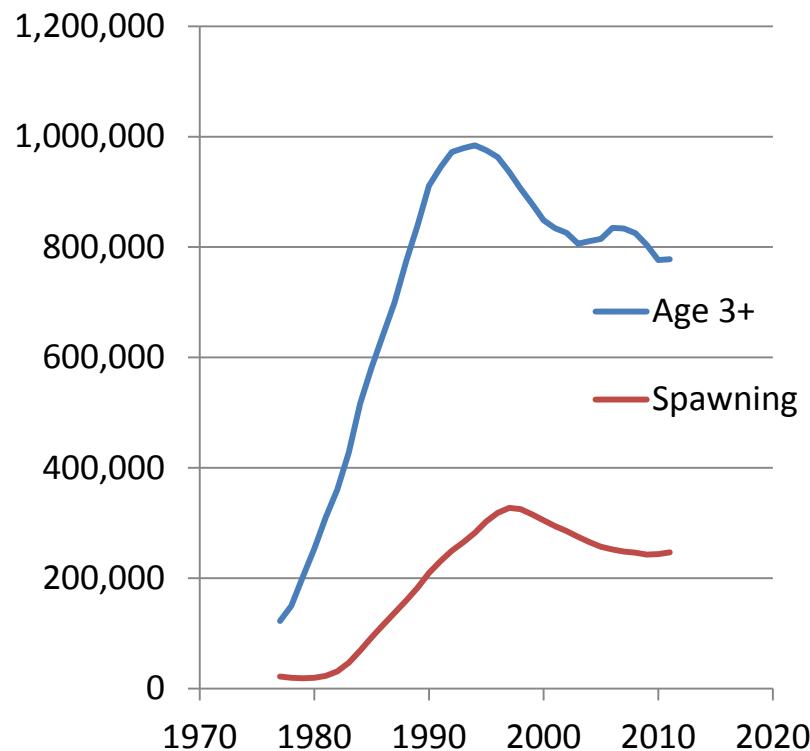




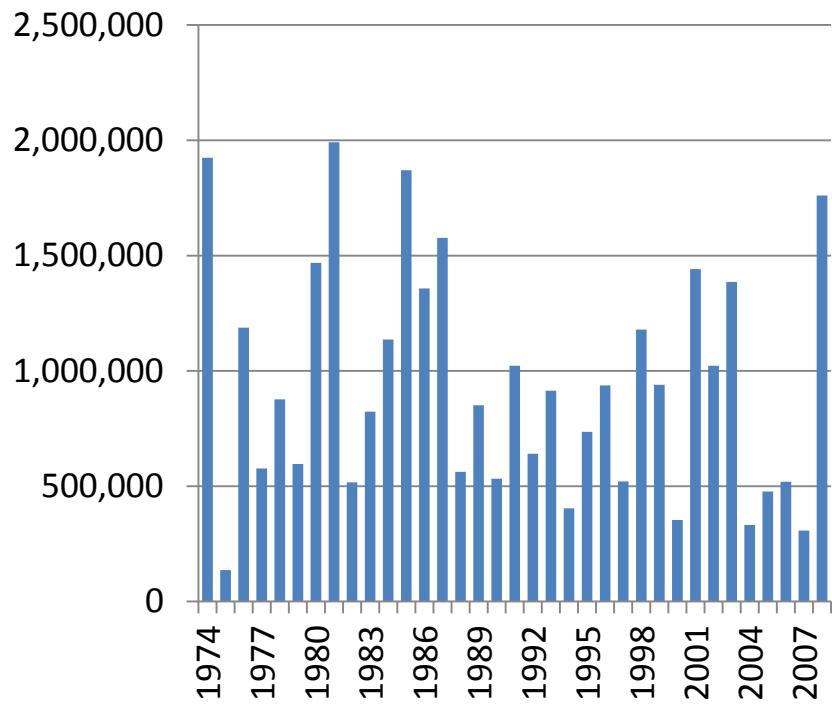
# Flathead sole



## Biomass (mt)



## Recruitment

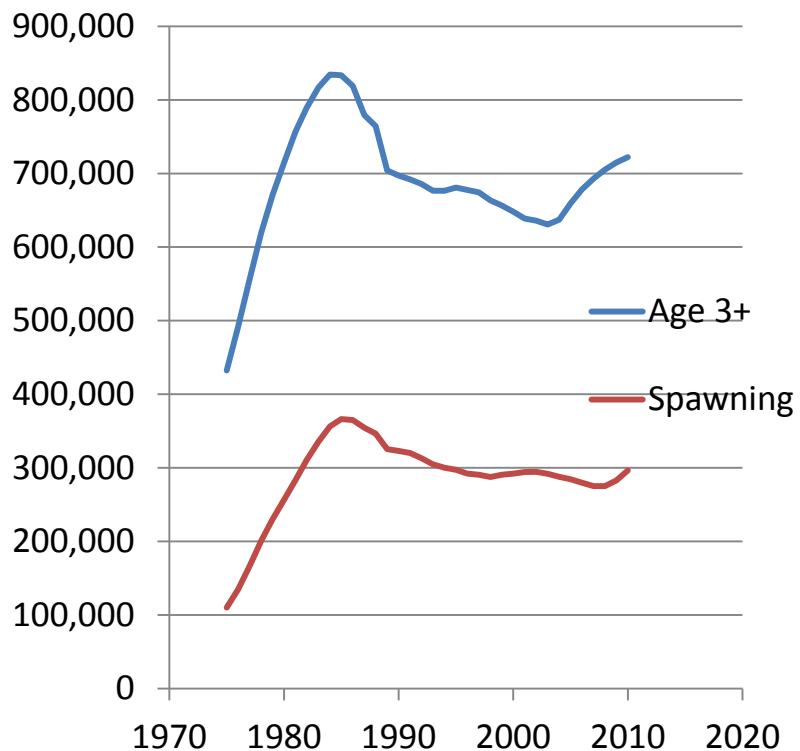




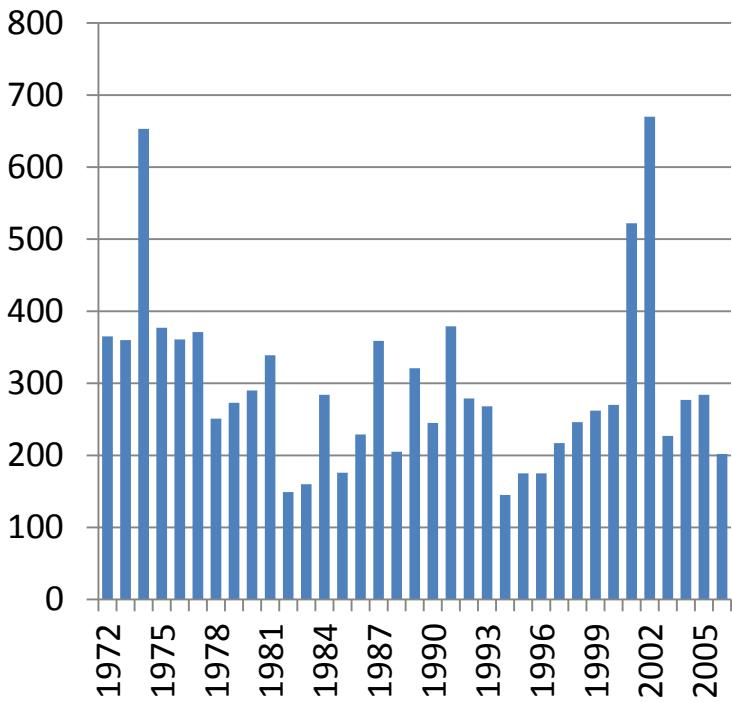
# Alaska plaice



## Biomass (mt)



## Recruitment

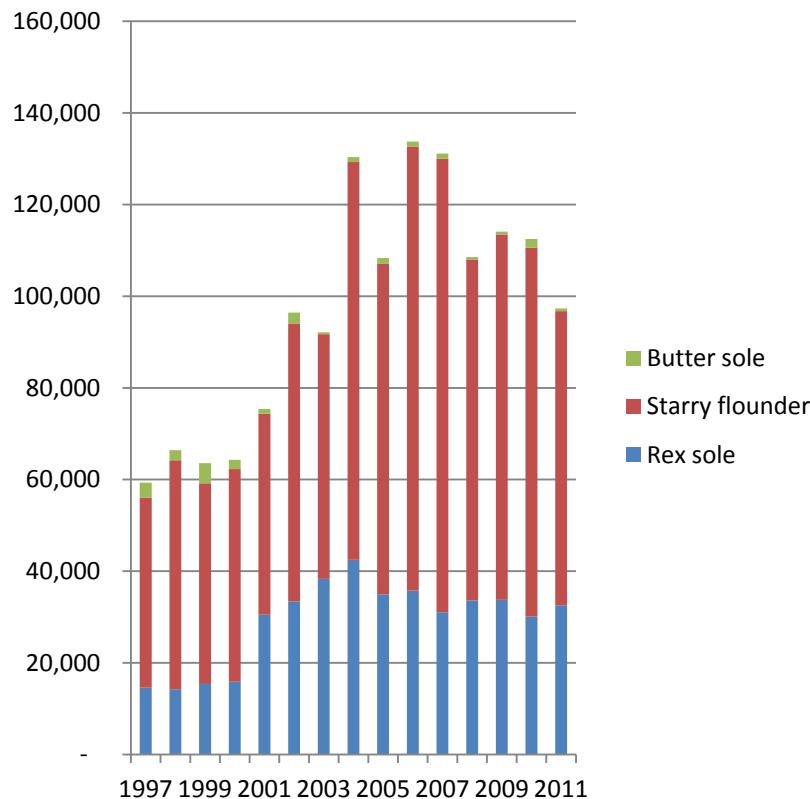




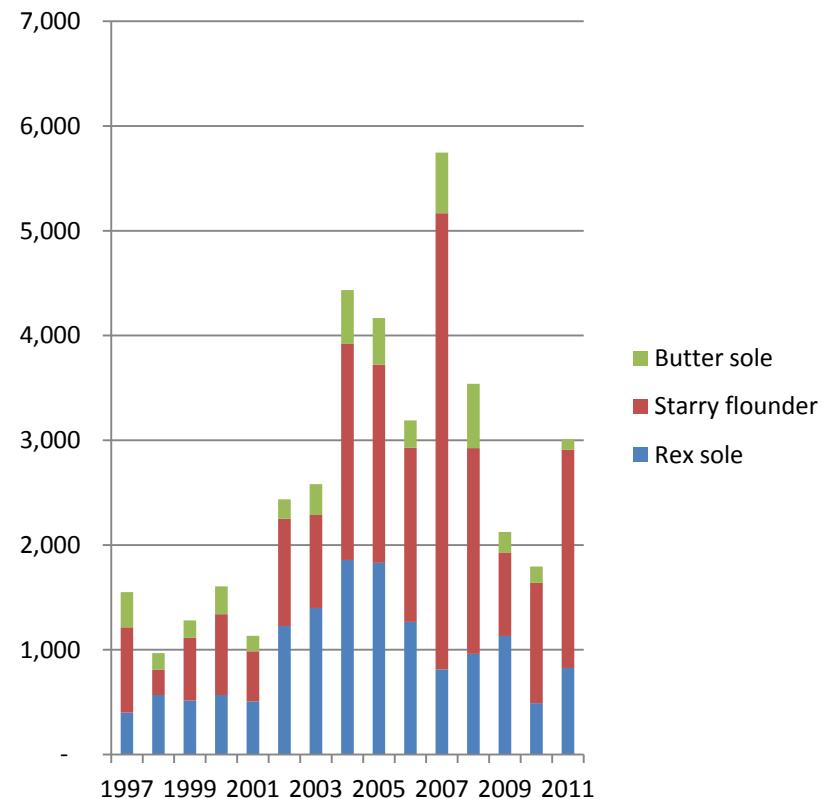
# Other flatfish



## Survey biomass (mt)

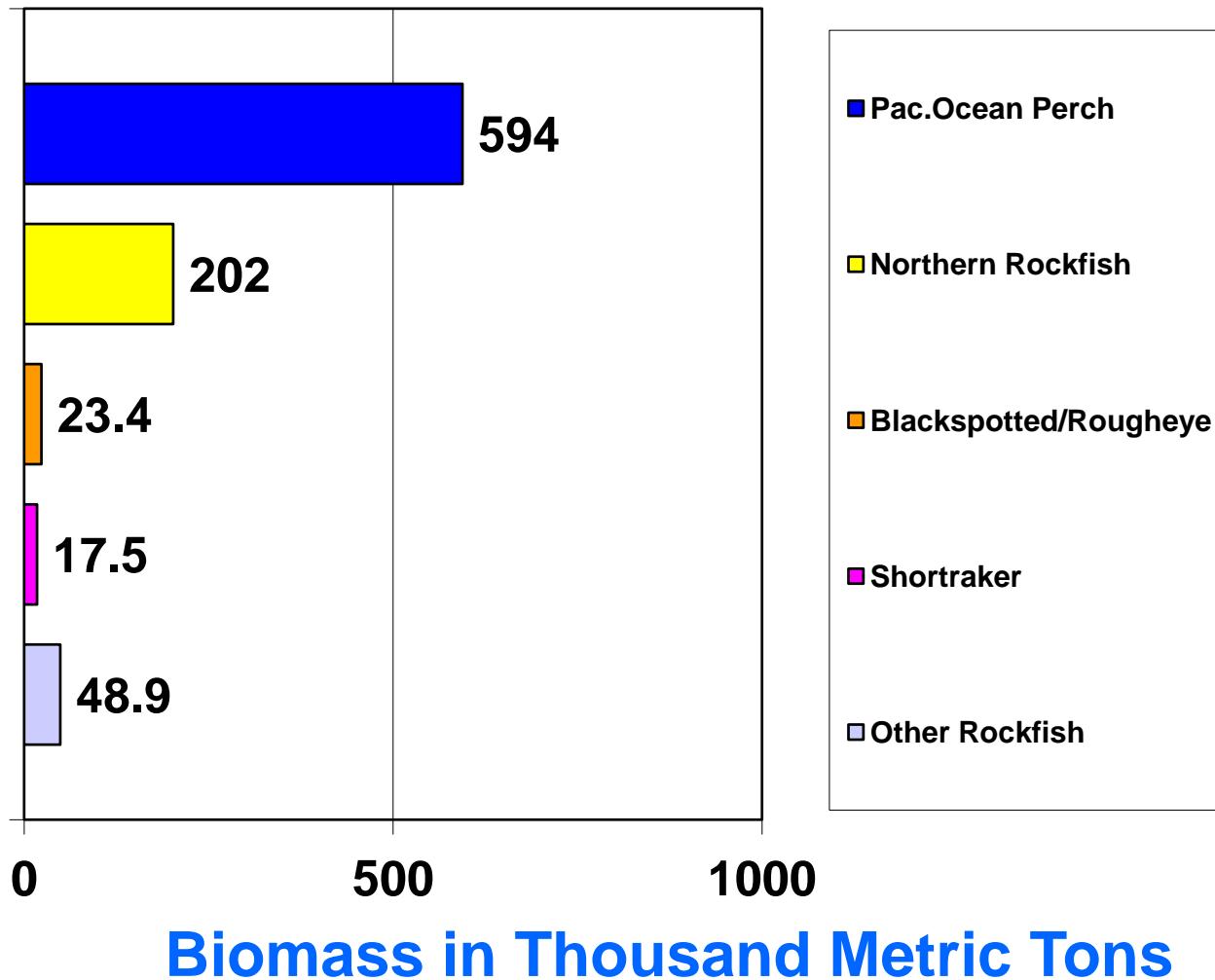


## Catch (mt)

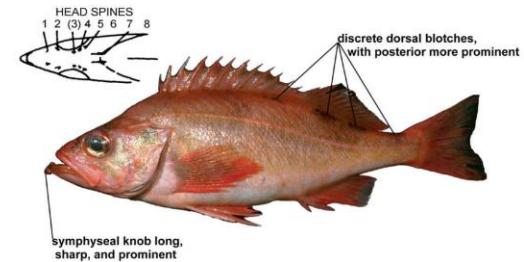


# Rockfish Complex Exploitable Biomass, 2010

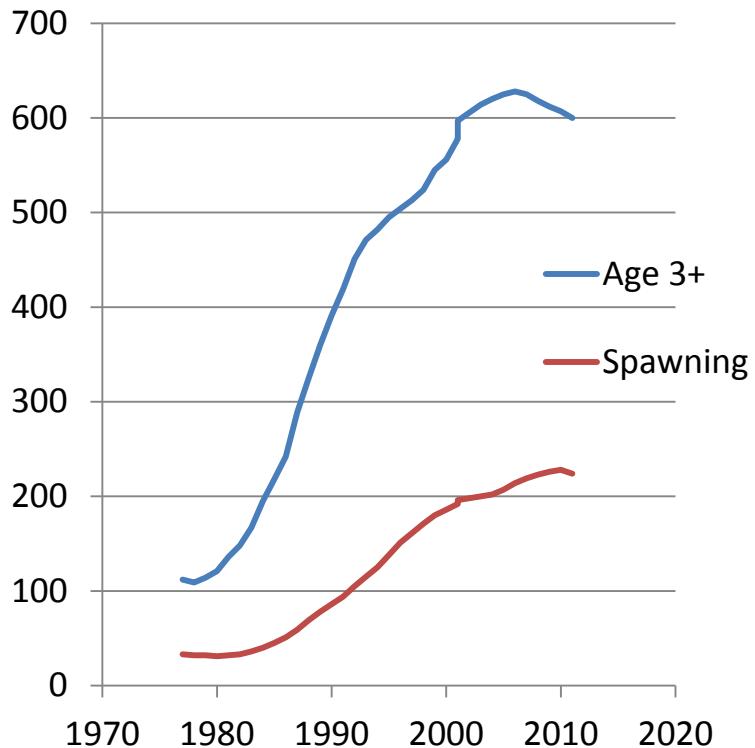
5% of BSAI Groundfish Biomass  
Mostly in Aleutians



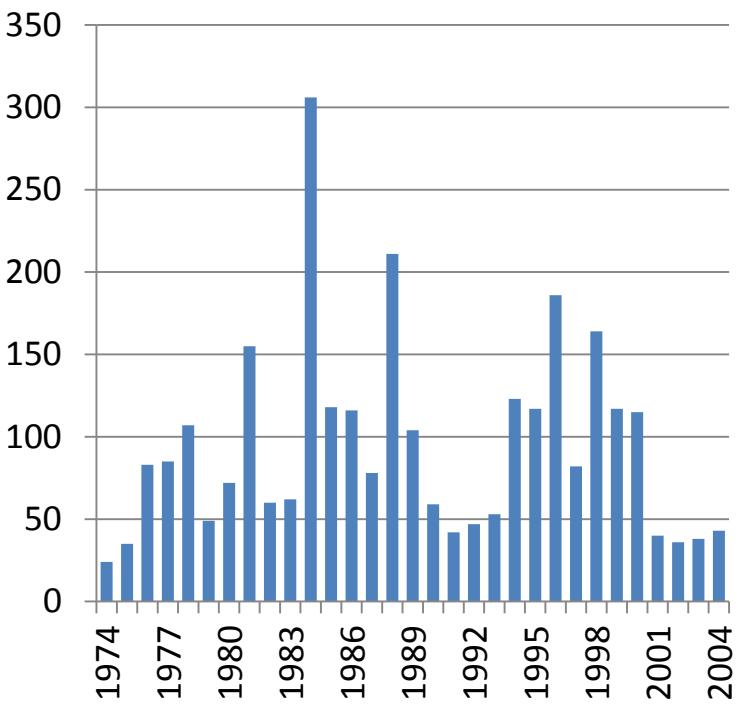
# Pacific ocean perch



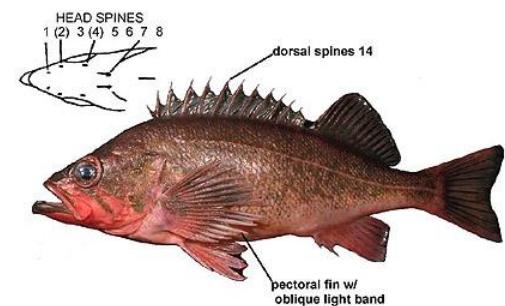
## Biomass (thousands mt)



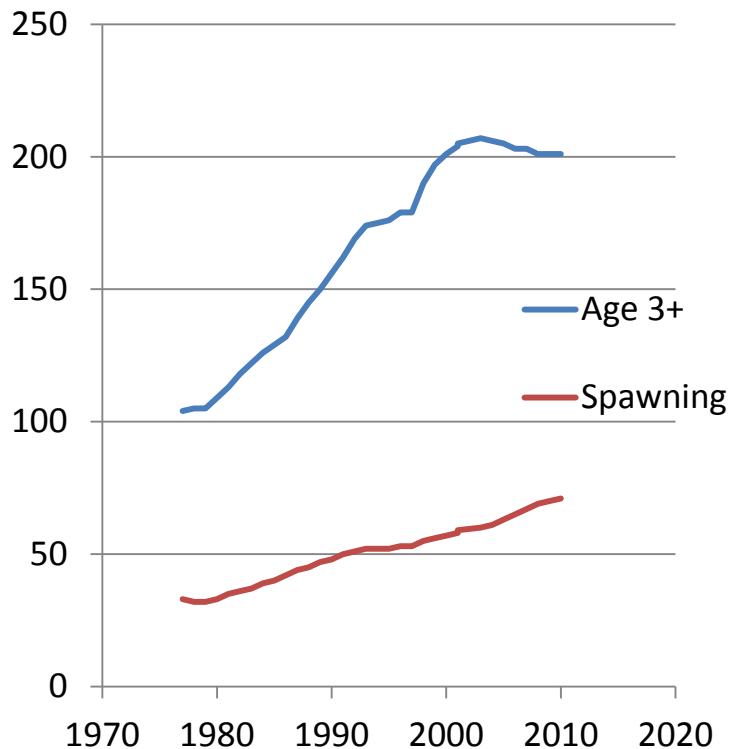
## Recruitment



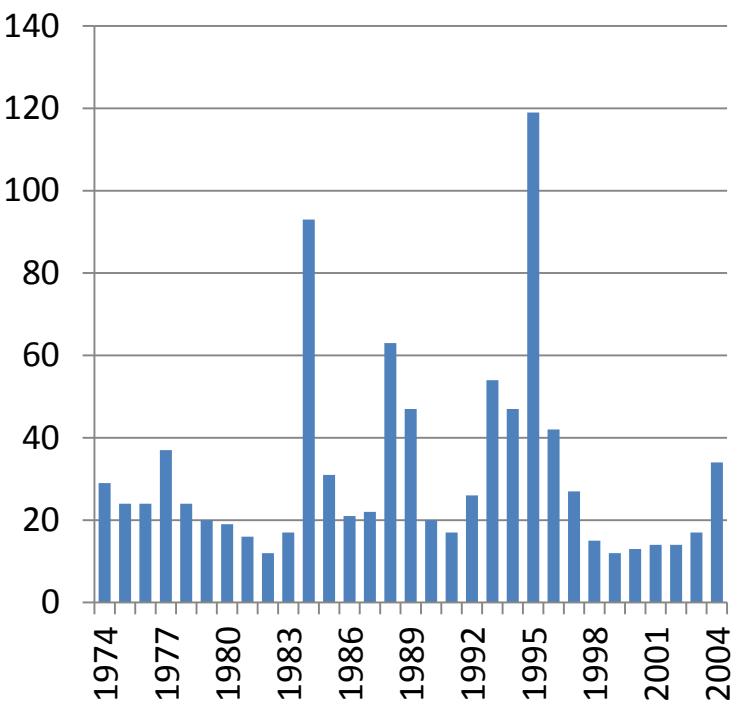
# Northern rockfish



## Biomass (thousands mt)



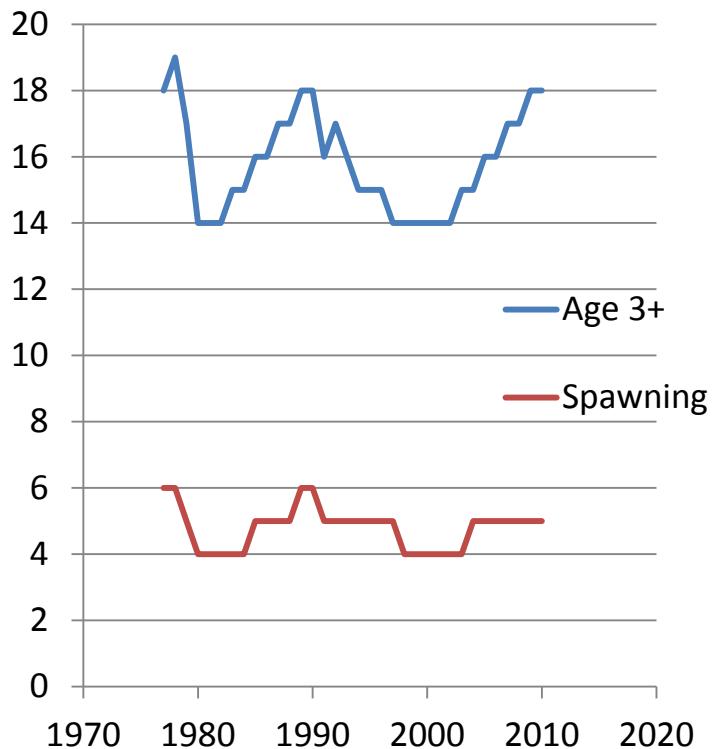
## Recruitment



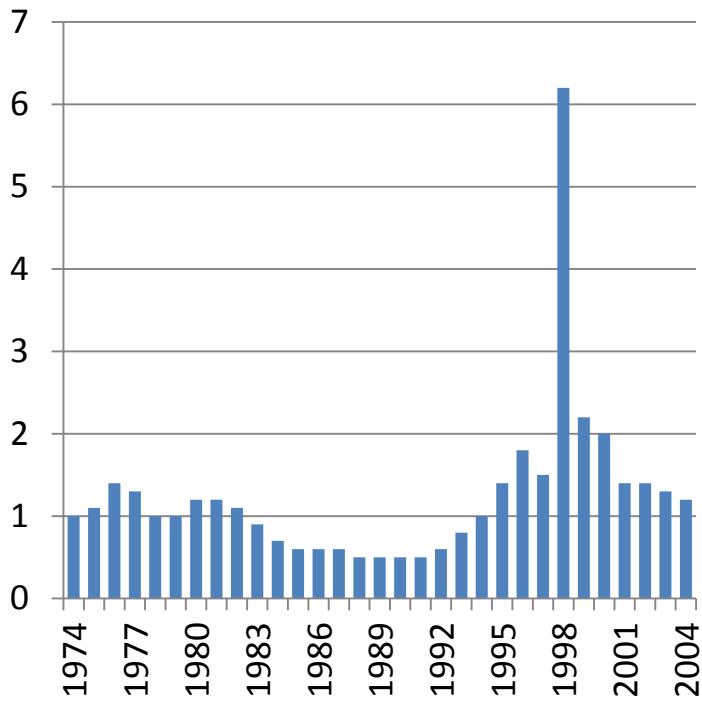
# Blackspotted/rougheye rockfish



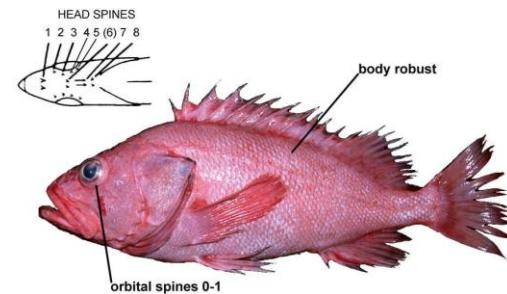
**Biomass (thousands mt)**



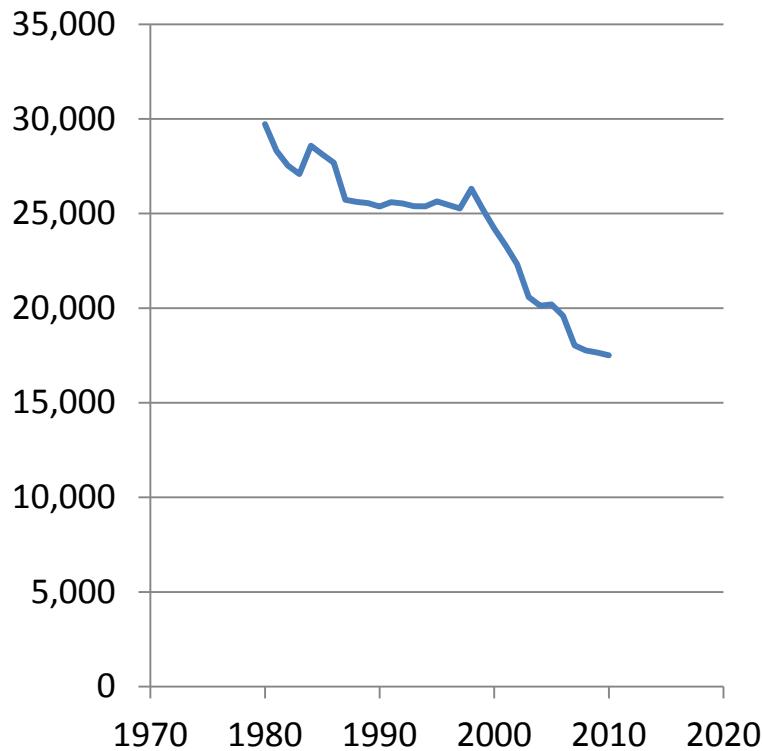
**Recruitment**



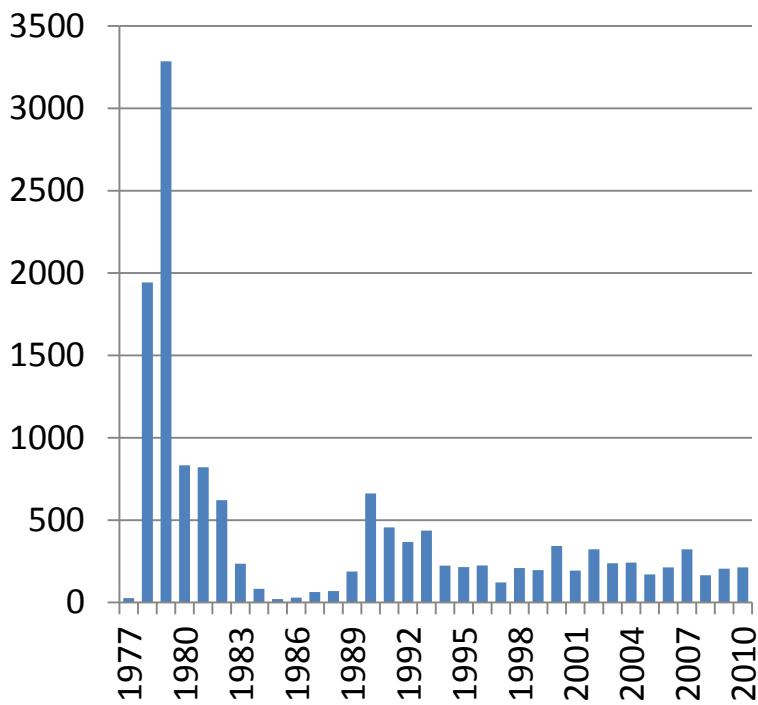
# Shortraker rockfish



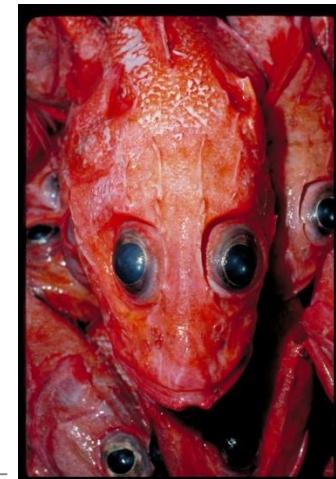
## Survey biomass (mt)



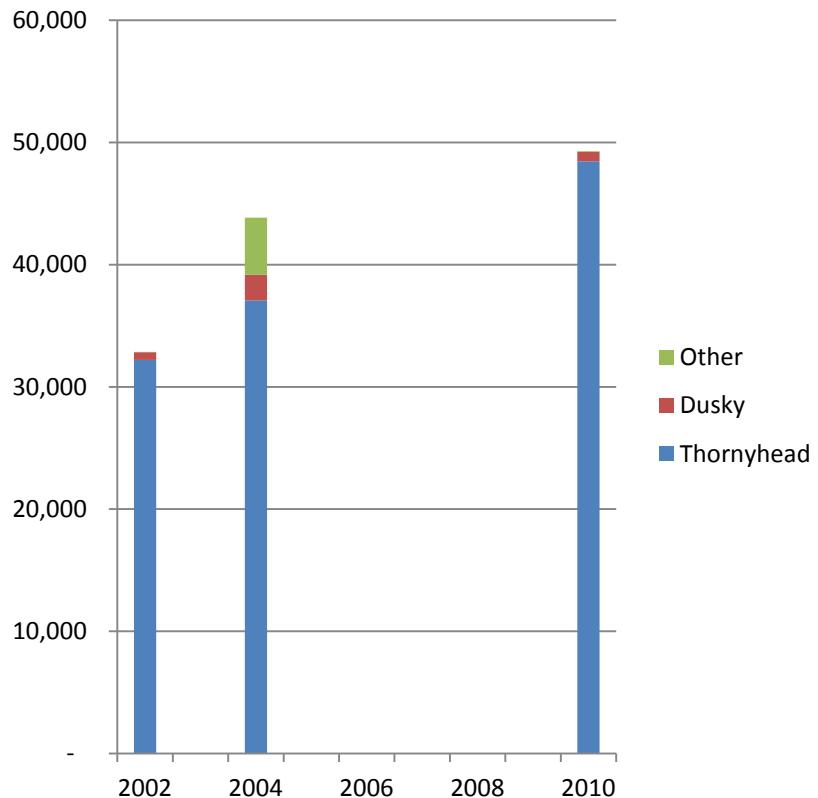
## Catch (mt)



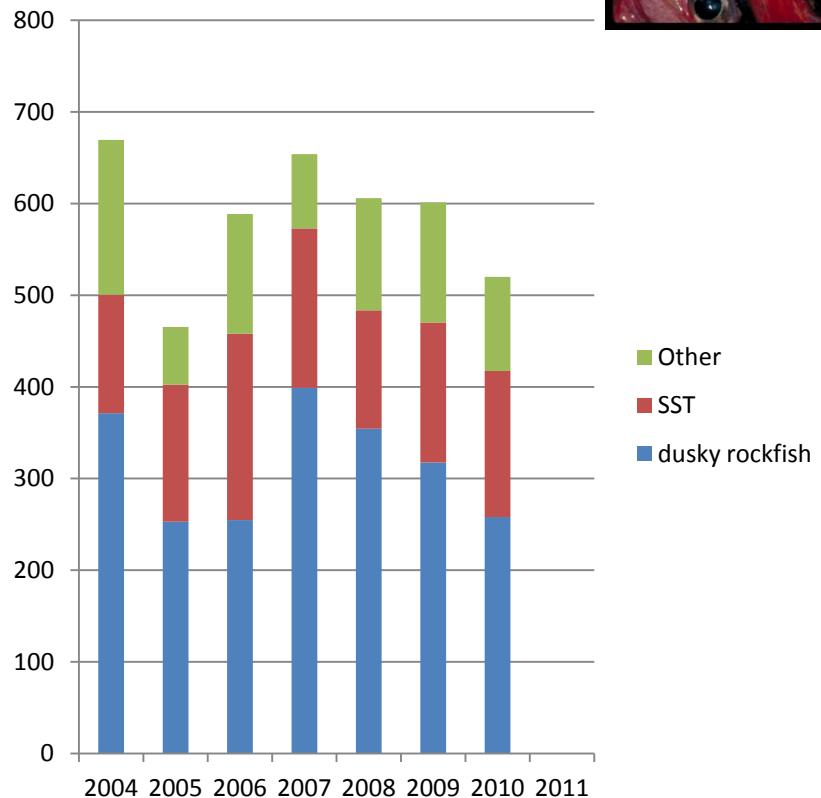
# Other rockfish



## Survey biomass (mt)



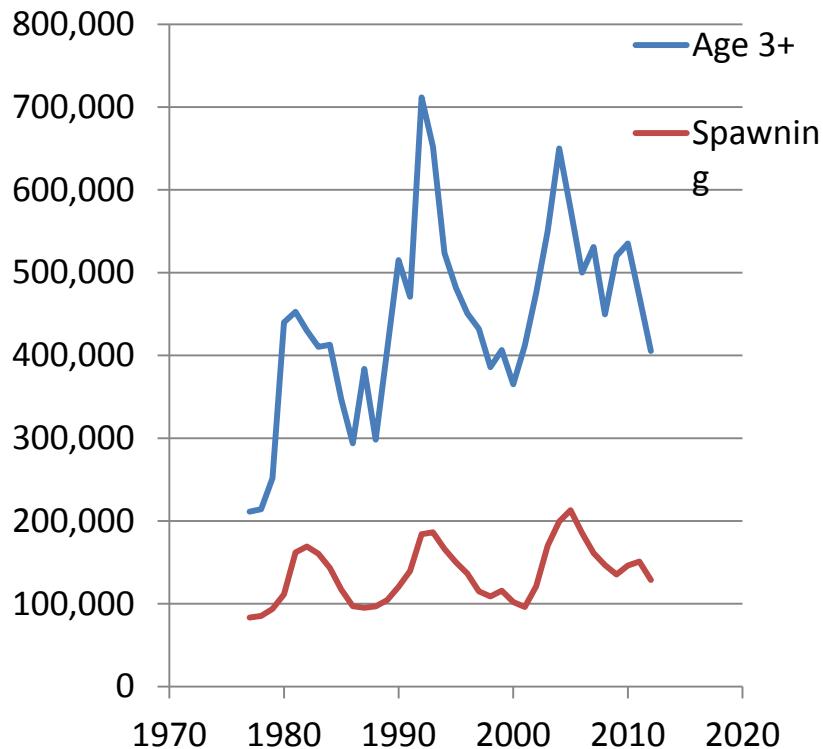
## Catch (mt)



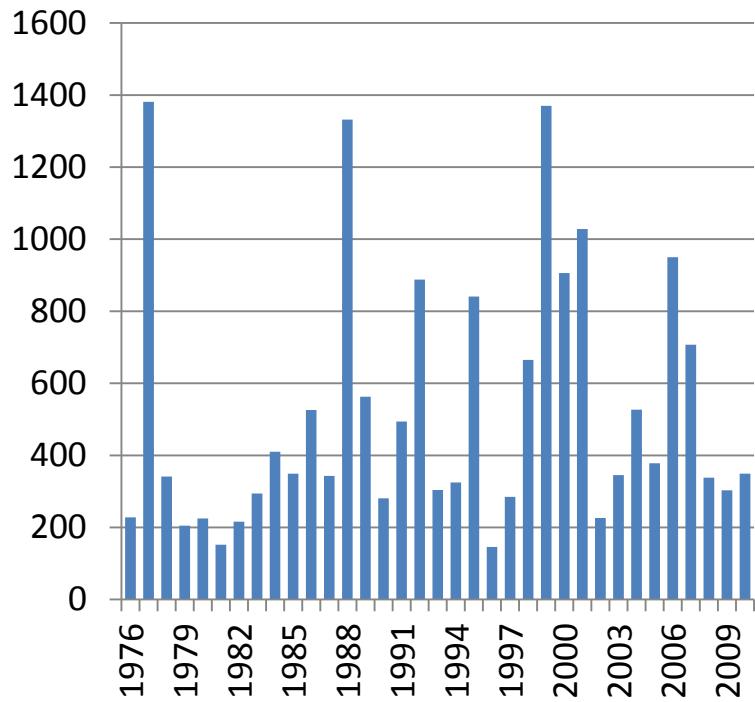
# Atka mackerel



## Biomass (thousands mt)

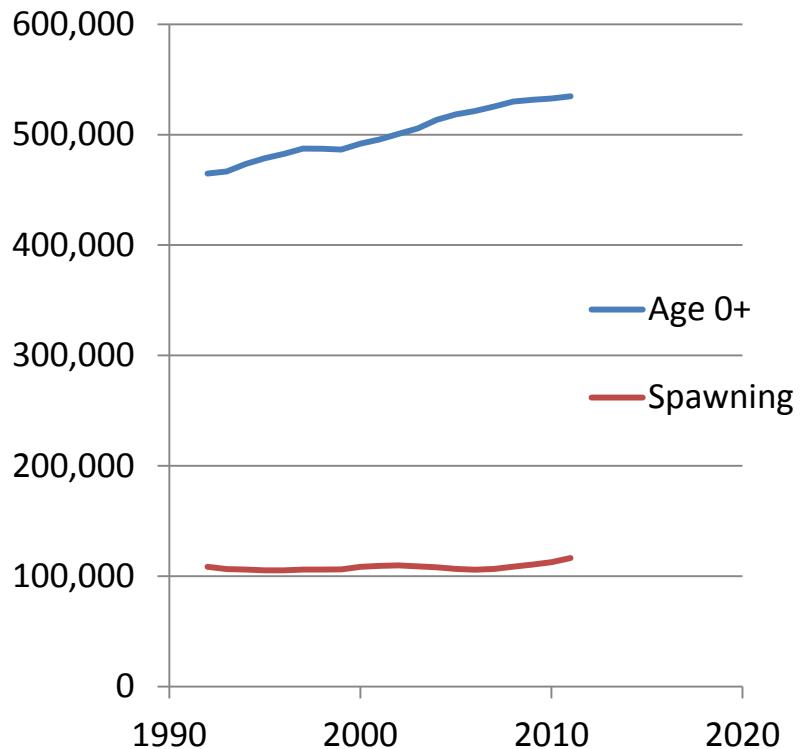


## Recruitment

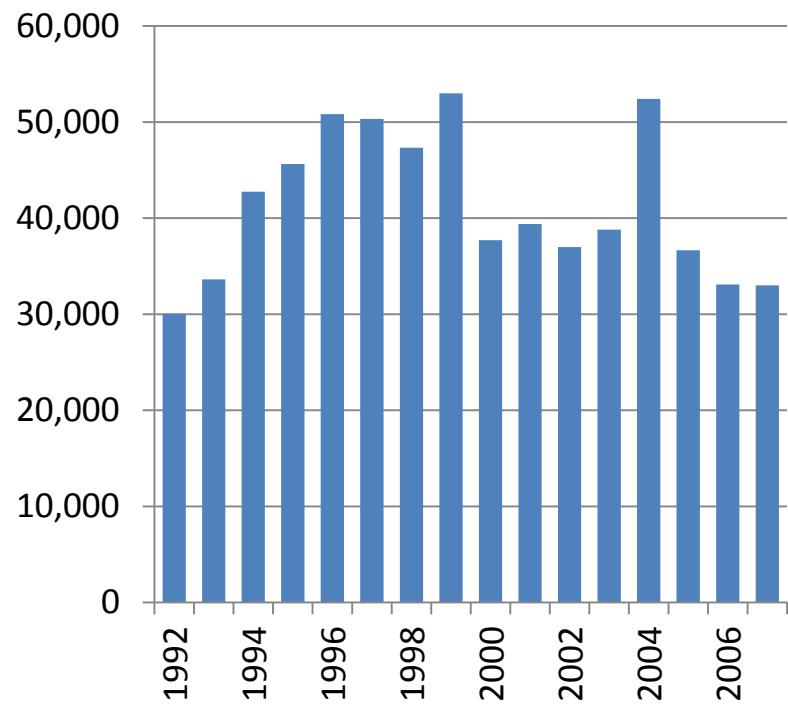


# Alaska skate

**Biomass (thousands mt)**



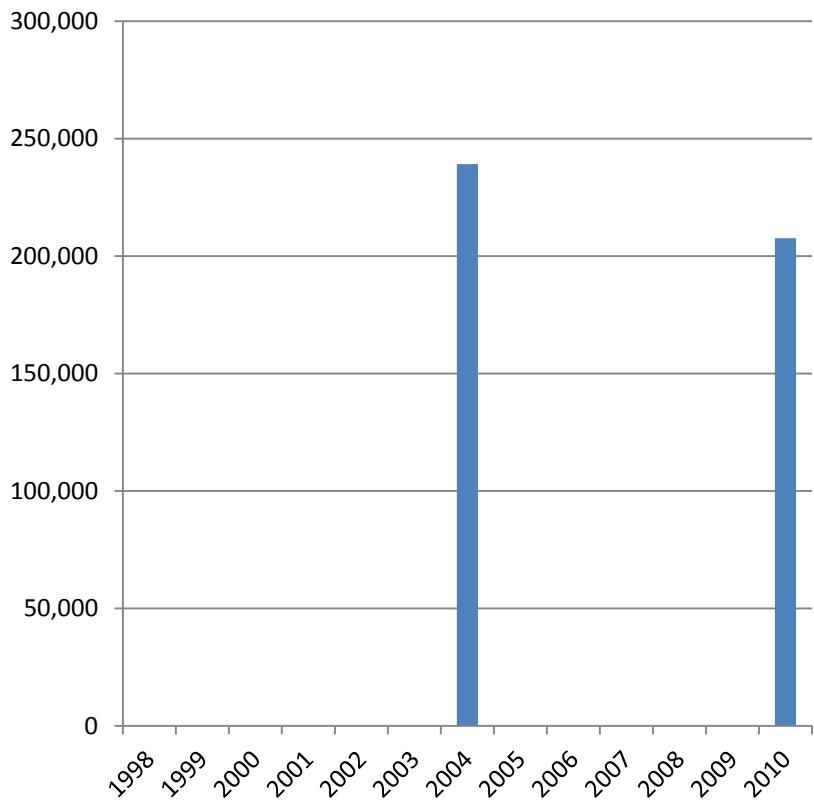
**Recruitment**



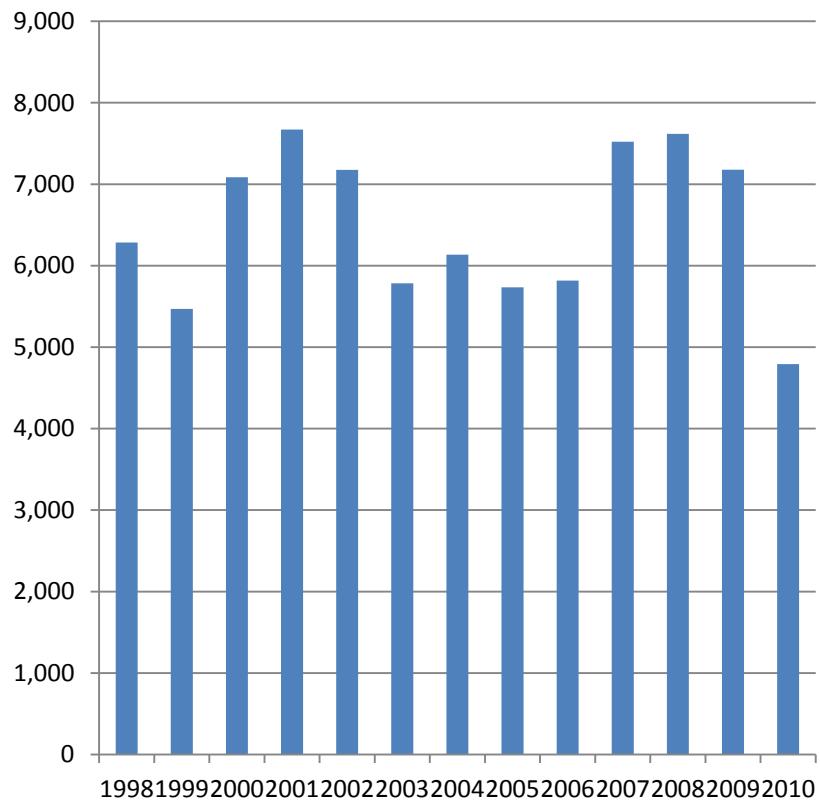
# Sculpin



## Survey biomass (mt)



## Catch (mt)

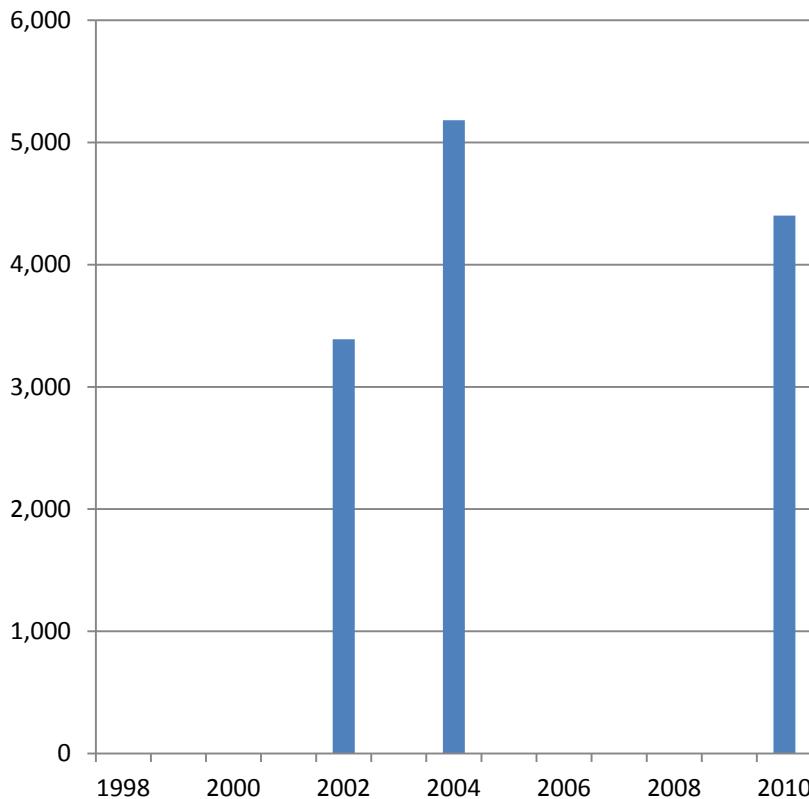




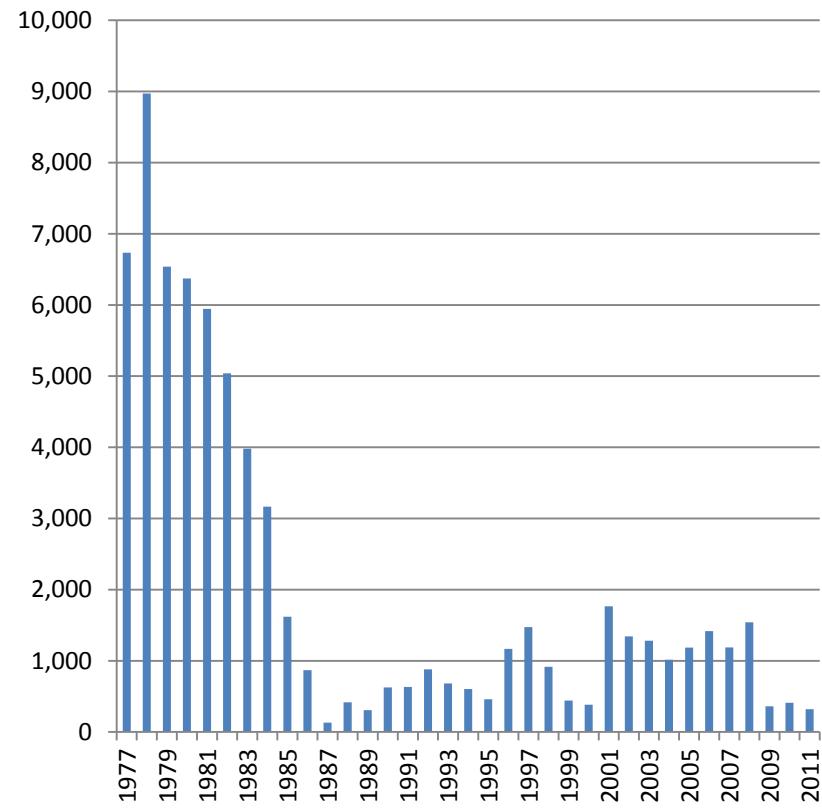
# Squid



## Survey biomass (mt)

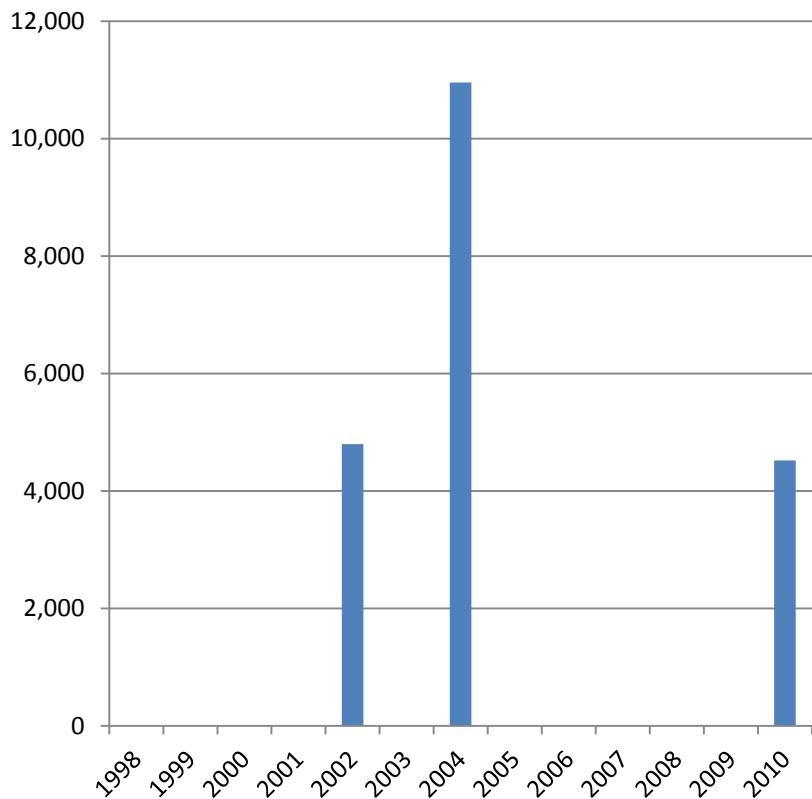


## Catch (mt)

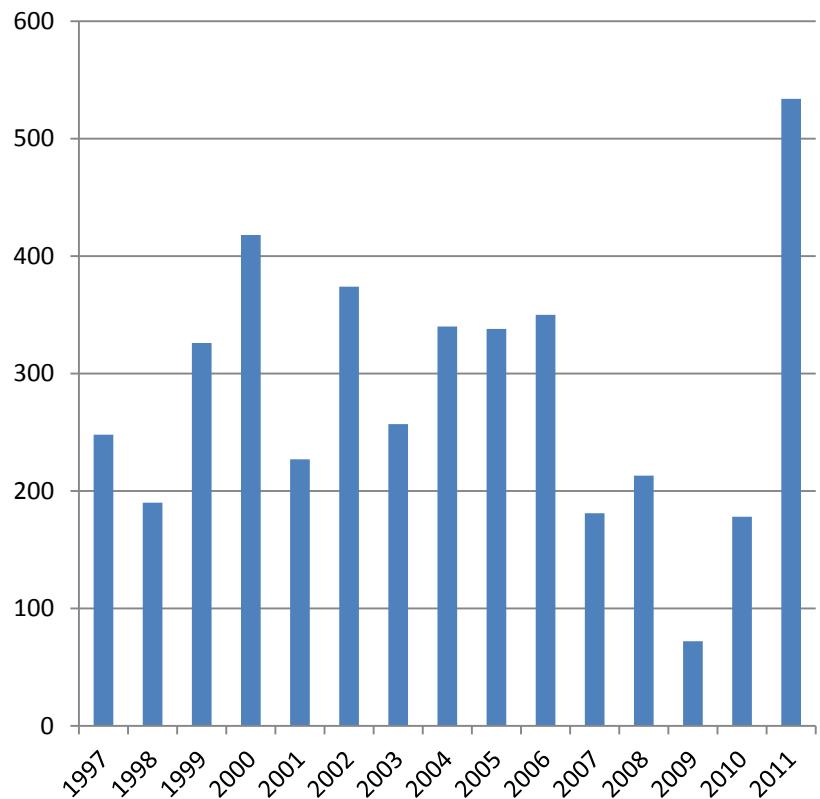


# Octopus

**Survey biomass (mt)**



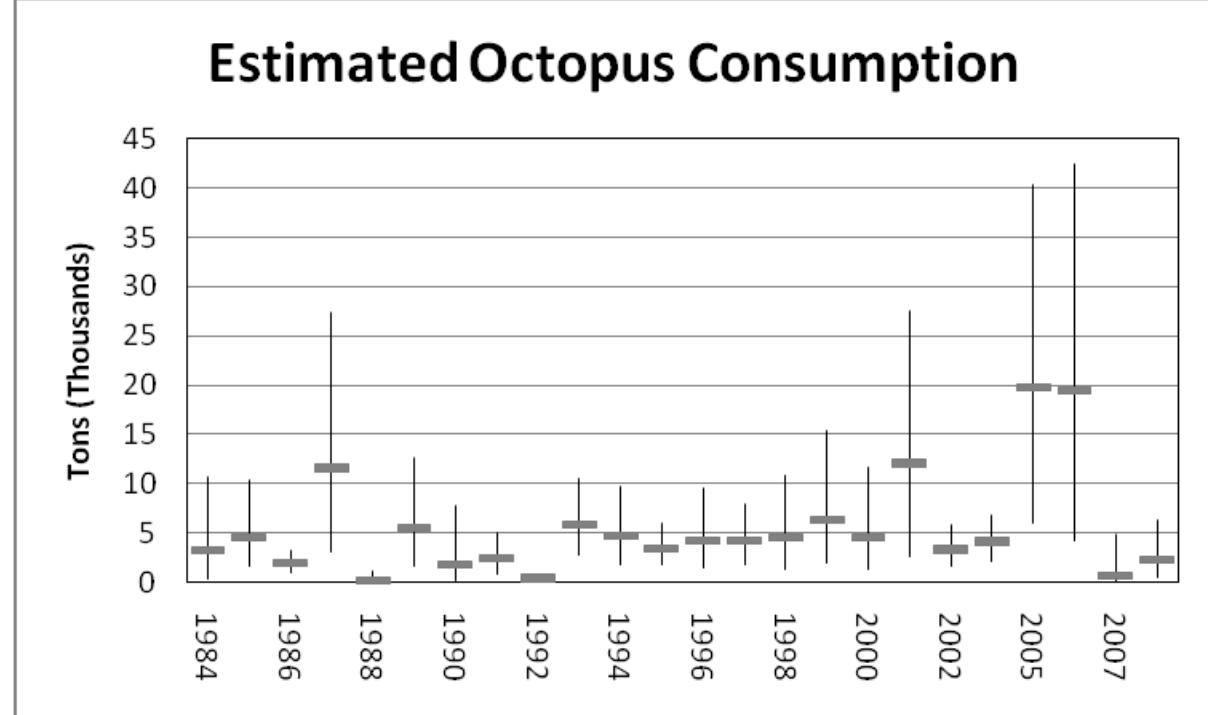
**Catch (mt)**



# Estimated consumption of octopus by cod



**Geometric  
mean of 3,452 t**



# Pollock

Species	Area	ABC		Change (%)
		2011	2012	
Pollock	EBS	1,270,000	1,220,000	-4%
	AI	36,700	32,500	-11%
	Bogoslof	156	16,500	10477%
	Total	1,306,856	1,269,000	-3%

# Cod, sablefish, Atka mackerel

Species	Area	ABC		Change (%)
		2011	2012	
Pacific cod	BSAI	235,000	314,000	34%
Sablefish	BS	2,850	2,230	-22%
	AI	1,900	2,050	8%
	Total	4,750	4,280	-10%
Atka mackerel	EAI/BS	40,300	38,500	-4%
	CAI	24,000	22,900	-5%
	WAI	21,000	20,000	-5%
	Total	85,300	81,400	-5%

# Flatfish

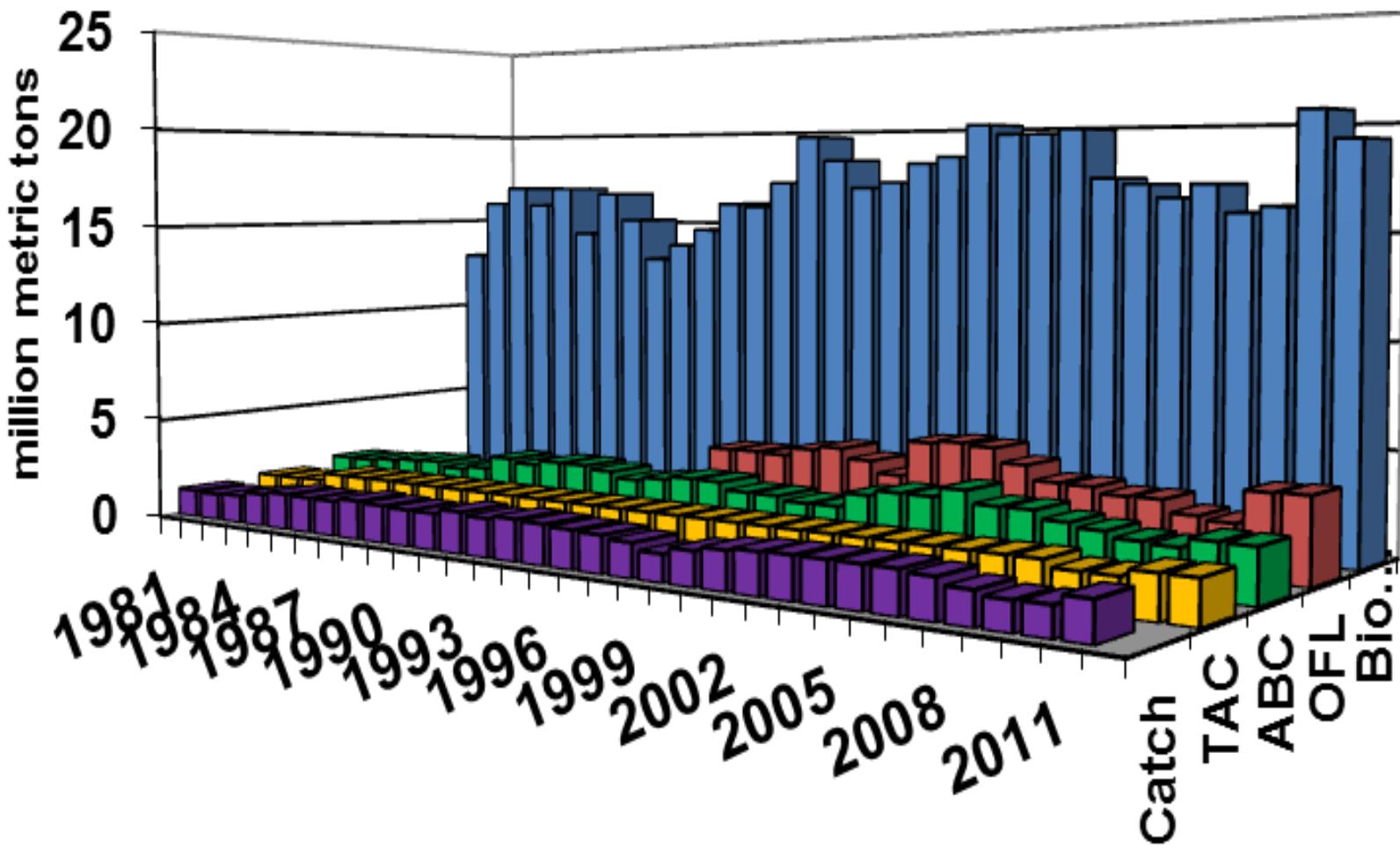
Species	Area	ABC		Change (%)
		2011	2012	
Yellowfin sole	BSAI	239,000	203,000	-15%
Rock sole	BSAI	224,000	208,000	-7%
Greenland turbot	EBS	4,590	7,230	58%
	AI	1,550	2,430	57%
	Total	6,140	9,660	57%
Arrowtooth flounder	BSAI	153,000	150,000	-2%
Kamchatka flounder	BSAI	17,700	18,600	5%
Flathead sole	BSAI	69,300	70,400	2%
Other flatfish	BSAI	14,500	12,700	-12%
Alaska plaice	BSAI	65,100	53,400	-18%
Flatfish	Total	794,880	735,420	-7%

# Rockfish

Species	Area	ABC		Change (%)
		2011	2012	
Pacific Ocean perch	EBS	5,710	5,710	0%
	EAI	5,660	5,620	-1%
	CAI	4,960	4,990	1%
	WAI	8,370	8,380	0%
	Total	24,700	24,700	0%
Northern rockfish	BSAI	8,670	8,610	-1%
Shortraker rockfish	BSAI	393	393	0%
Blackspotted/Rougheye Rockfishes	EBS/EAI	234	231	-1%
	CAI/WAI	220	244	11%
	Total	454	475	5%
Other rockfish	EBS	710	710	0%
	AI	570	570	0%
	Total	1,280	1,280	0%
Rockfish	Total	61,931	61,913	0%

# Other species

Species	Area	ABC		Change (%)
		2011	2012	
Squids	BSAI	1,970	1,970	0%
Skates	BSAI	31,500	32,600	3%
Sharks	BSAI	1,020	1,020	0%
Octopuses	BSAI	396	2,590	554%
Sculpins	BSAI	43,700	43,700	0%
Other species	Total	78,586	81,880	4%



Biomass, Overfishing Level, Acceptable Biological Catch and Total Allowable Catch for 1981-2012\* and Catch, 1981-2011 (\*2012, as recommended by the Plan Team and assuming TAC = OY)

# Preview Plan Team Sept 2012

- Halibut discard mortality rates for 2013-2015
- Bering Sea cod model review
- Aleutian Island cod model review
- BSAI octopus consumption model; possible octopus discard mortality rates
- Discuss biennial flatfish assessments

# Preview Joint Plan Team Sept 2012

- Stock/Recruitment work shop
- Non-target species discard mortality rates
- Area apportionments
- ACL/HFICE data in stock assessments